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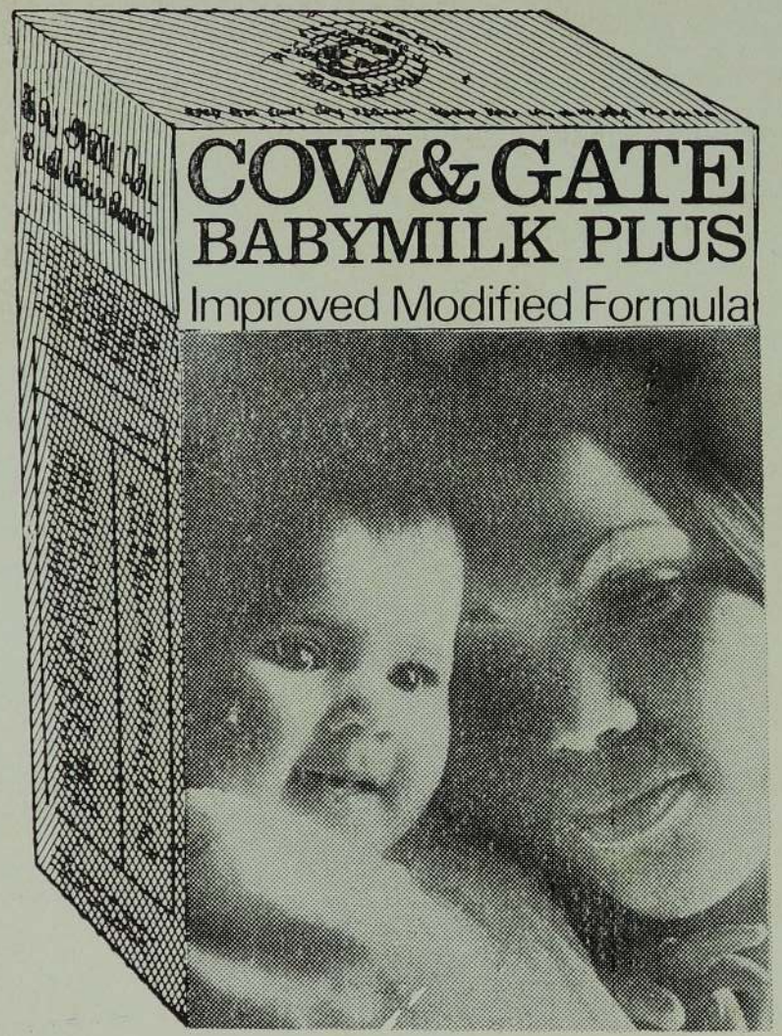

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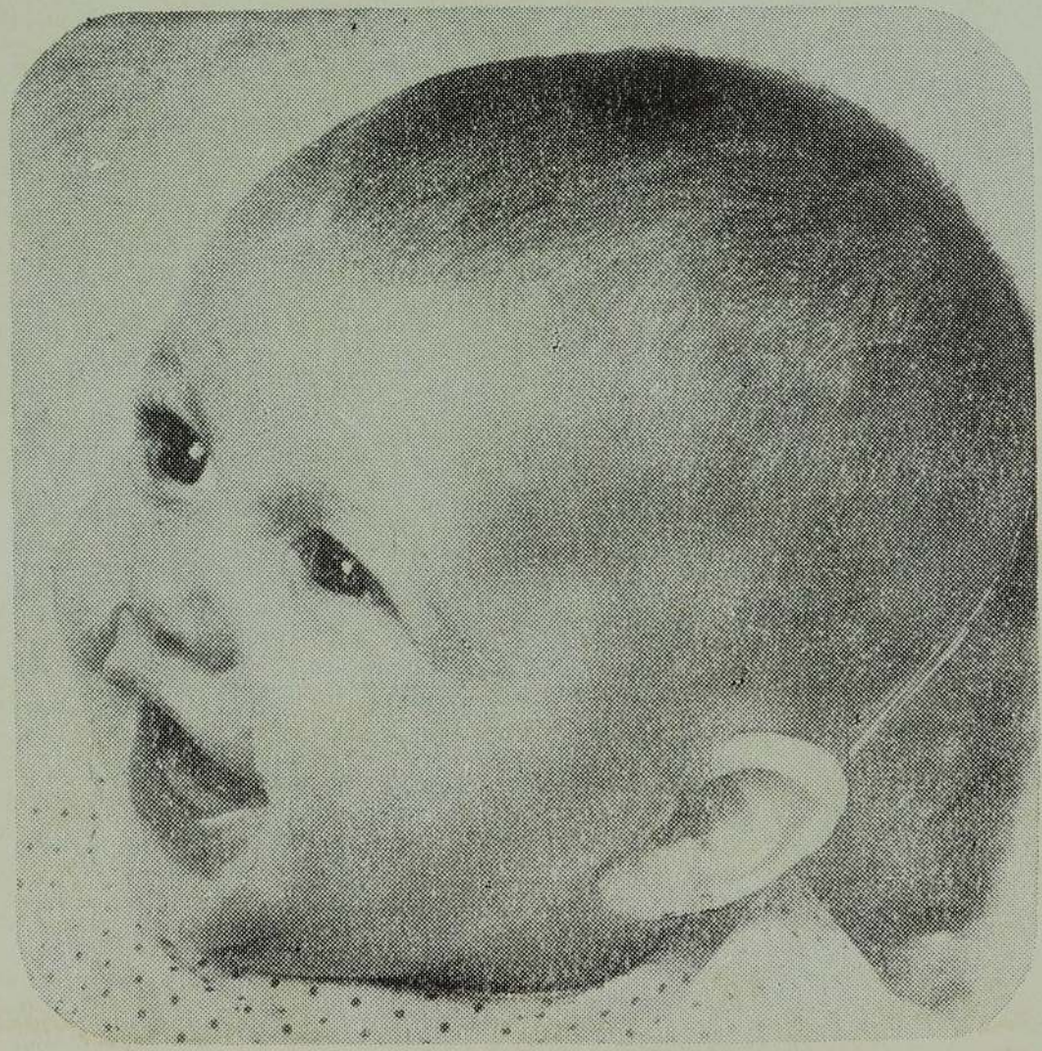

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(F. I. G. O.)

Editor

A. S. THAVARASAH

VOL. 8 **DECEMBER 1979.**

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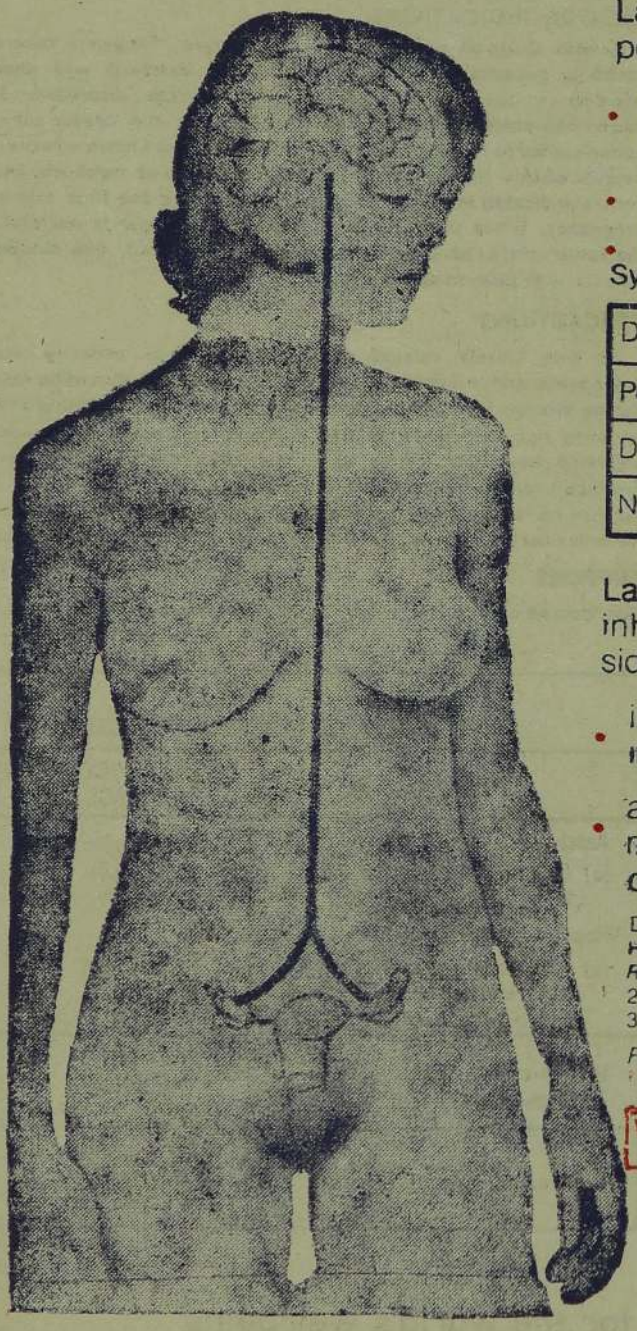

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2. Data on file, Medical Dept., Winthrop Products Inc., New York, N.Y.
3. Greenblatt, R.B., *et al. Fertil. Steril.* 22: 102-112, Feb. 1971

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Giardiasis	500 mg.	Single dose of 4 tablets.	1

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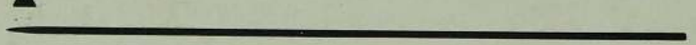
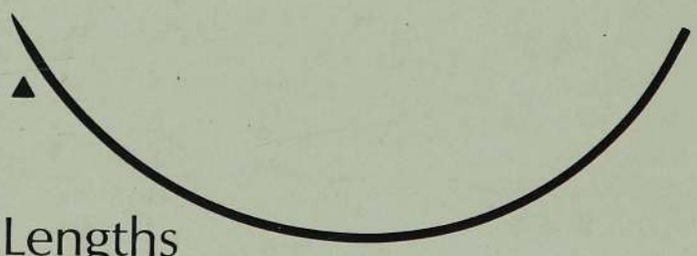
W5766	CUTICULAR	75mm straight cutting needle attached to 3 Metric (2/0) NUROLON Black Braided Polyamide 66 1m.	▲ 
W5791	CUTICULAR	90mm curved cutting needle attached to 3 Metric (2/0) NUROLON Black Braided Polyamide 66 75cm.	▲ 

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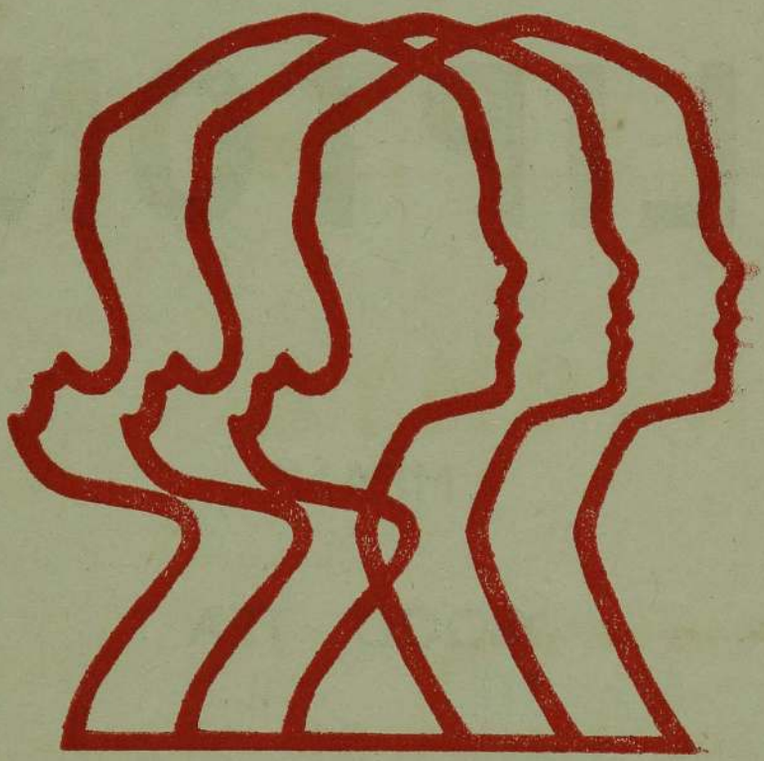

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Trends in Female Sterilization at the General Hospital, Kandy

by

Kingsley de Silva*
N. T, Kurukulasuriya**

The General Hospital at Kandy whilst serving an indigenous population of over 100,000 within the city, also attracts patients from a wide area despite the presence of satellite hospitals with Obstetric Units at Kegalle, Matale, Nawalapitiya and Nuwara Eliya. Situated at an elevation of 1670 feet, with terrain reaching 6 to 8,000 feet within a radius of 25 miles, communications with the center are at best unsatisfactory and especially so during the monsoons. This often leads to prolonged hospitalization of the parturient before delivery and to some extent afterwards if sterilization is done. For these reasons, over-crowding is prevalent and due to the large numbers operated on, mothers who are tubectomized are given the facilities of a bed only on the day of the operation.

Female sterilization in this country has been carried out rather haphazardly in the past. Till the late 1960s, obstetricians did not actively engaged themselves in utilizing this method as a form of permanent family limitation. One of the early movitating factors was the adoption by the Government of Sri Lanka of family planning as an integral part of the Family Health Programme in 1965. The United Nations Fund for population Activities program initiated in 1973 also made an impact in no uncertain a measure. At the present time, there is an ever incresing momentum towards the use of female sterilization as a method of family limitation. In fact, we now find that some Obstetricians are finding it difficult to meet the demand due to the presence of diverse constraints.

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However, at the General Hospital, Kandy we appear to have reached saturation point regards the numbers sterilized and any further increase would only be marginal. This paper attempts to highlight the trends in female sterilization at the above institution during the years 1969 to 1979.

TABLE 1

Year	No. of deliveries	No of L.R. Ts.	% sterilized
1969	6783	196	2.8
1970	7754	176	2.4
1971	7254	330	4.5
1972	7481	635	8.5
1973	7742	966	12.4
1974	7585	2300	30.3
1975	7279	2498	34 3
1976	8777	2498	28.5
1977	9013	771	8.6
1978	9733	1514	15.6
1979 (up to Aug.)	6527	1621	24.8

Table I shows the relationship between the number of deliveries and the total number of tubectomies — post — partum and interval done during the period 1969 to 1979.

The striking feature is the phenomenal increase in the number sterilized through the years. It also shows that having reached a desirable level, it has been maintained with perhaps a not insignificant upward swing till 1975. The reduction of numbers sterilized after 1976 is multifactorial. A 'go slow' by the medical profession demanding the right of consultation practice, paucity of anaesthetists and theatre time appear to have contributed to the low figures in 1977.

A 30 to 35% sterilization rate is indeed a high figure. When individual units are considered the rate is even noticeably higher. A similar rising trend has been reported from the University Unit in Kuala Lumpur, Malaysia (Puwan 1973).

Table 2 gives a detailed analysis of the deliveries and tubectomies performed at the General Hospital, Kandy in all three Obstetric and Gynaecological Units. This is done to identify the periods during which both specific stimuli as well as constraints have been operative.

During the years 1969 and 1970, there does not seem to have existed any local or general stimulus to step up the numbers undergoing female sterilization. During this period the average monthly rate has been between 15 - 16 operations despite the high delivery rate. In 1971 too this profile has been continued during the first five months. In June, the numbers have been doubled and maintained so in the remaining months. The stimulus to this has not been identified but is probably the result of the acceptance of Family Planning as a means of reducing fertility and population growth. The drop during early 1971 is perhaps due to the exigencies of service and curfew during the insurrection.

The next stimulus appears to have been in November 1972. The numbers have again doubled. This was due to the appointment of a motivated Resident Obstetrician who took an active interest in this program.

The next rise has been in April 1973. This is no doubt due to the appointment of two strongly motivated Consultant Obstetricians who gave an impetus to the relatively inert program. Despite this, the last four moths of the year recorded diminished activity. This has been due to the breakdown of operating theatre facilities stemming from repairs to it. If not for this constraint, substantial numbers would have been operated on.

The numbers showed a rise for the first time over the 200 mark only in July 1974. This period marked yet another stimulus with the appointment of yet another motivated Obstetrician and Gynaecologist. The opening of an operating room for tubectomies in October 1974, helped in no small measure and perhaps cushioned the reduction sustained in December 1974 and January 1975, due to the acute shortage of anaesthetists. January 1975 marked yet another milestone in that loop resection of tubes were now performed under local anaesthesia in the newly commissioned operating room As the figures show December 1975, saw yet another reduction brought about by the unavailability of anaesthetists.

A marked drop in the number of women sterilized was seen in November 1976. This was chiefly due to the fact that the doctors responsible for the program went on a 'go slow' to achieve their demands from the government. Although the demand for the right of consultation practice for all doctors was one of them, other factors like dearth of anaesthetists and lack of theatre time also contributed in no small a measure to bring about this drastic reduction. As is seen in the table it has taken about two years for the program to reach its present level. An incentive program began in April 1979 appears to have given the necessary impetus to maintain the momentum of the LRT program.

Some of the factors which have been responsible for the success of the L. R. T. program in Kandy are given below. They are not enumerated either in time sequence nor in degree of sensitivity.

1. The program of the United Nations Fund for Population Activities.
2. The appointment of motivated resident as well as consultant staff.
3. The employment of midwives and nurses to motivate patients admitted to the Obstetric and Gynaecological service.
4. Opening of a new L. R. T. operating room.
5. The provision of additional beds for L.R.Ts.
6. The use of local anaesthesia in the program to overcome shortage of anaesthetists.
7. Good liaison between the M. Os, M. C. H. and hospital staff.
8. Use of volunteers in certain specified areas to motivate patients.
9. An incentive scheme where by medical, nursing and paramedical personnel have been given a remuneration for work done.

Opening of a new operating room for female sterilization

The 'forceps' room attached to the labour ward was hardly if ever used in the recent past. These operations are now being done in the main operating room C. As such. certain modifications were effected with minimal expenditure and a spacious operating room was the nett result. Fittings included a discarded operating room, overhead light and a 'Russian type' operating table with minimal facilities for lowering the

TABLE 2

Month	1969		1970		1971		1972		1973		1974		1975		1976		1977		1978		1979	
	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT	Del.	LRT
Jan.	621	21	573	15	680	14	692	46	670	84	665	138	651	141	729	214	722	41	819	84	887	176
Feb.	514	28	503	8	614	6	493	39	653	33	539	167	497	230	702	197	701	74	774	162	750	224
Mar.	621	16	649	23	640	16	557	50	730	83	699	195	666	205	695	320	867	79	841	164	861	181
Aprl.	575	14	626	22	566	5	692	50	673	100	612	174	687	212	731	218	803	64	822	84	813	224
May	598	11	652	13	626	12	676	44	713	149	664	185	602	197	702	227	800	93	765	80	911	203
Jun.	517	15	611	17	588	37	631	58	662	114	600	177	551	220	646	211	744	78	830	78	837	173
July	560	12	566	14	533	40	561	66	570	160	550	230	577	283	791	278	724	79	743	152	734	198
Aug.	531	12	504	18	552	40	541	49	547	174	528	248	557	236	736	302	713	69	769	175	734	242
Sept.	533	8	565	12	537	35	520	51	644	14	608	182	578	245	752	265	725	36	748	109		
Oct.	557	14	632	5	635	38	643	46	665	13	570	254	600	238	761	214	699	48	899	132		
Nov.	603	16	624	13	634	39	668	72	551	12	569	216	632	184	740	36*	724	72	827	135		
Dec.	553	27	649	16	649	48	710	83	664	33	611	134	626	155	792	16*	791	38	896	162		
		194		176		330		635		966		2300		2498		2498		771		1514		1621
																28.5%		8.6%		15.6%		24.8%

* doctors' go slow.

head end of the table. This table was rejected by the chief anaesthetist as being unfit for administering a general anaesthetic but was pressed into service till such time a new one could be obtained.

Due to the shortage of staff, especially nurses trained in operating theatre techniques, sterilizations were only undertaken in the mornings from 8.00 a.m. to 12.00 noon. These nurses were channelled to this new operating room from the Obstetric wards.

Though lack of an air conditioning plant hampered the Surgeons, this was to some extent ameliorated by the use of a pedestal fan.

The influence of the new operating room is shown in Table 3 and 4.

TABLE III

Months 1974	Total L.R.Ts.	Main O.R.	L.R.T.O.R.
October	254	147	107
November	216	183	33
December	134	111	23

TABLE IV

1975	Jan.	Feb.	Mar.	Apr.	May	Ju.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Total	141	230	205	212	197	220	283	236	245	238	184	155
Main O.R.	128	216	170	169	145	160	185	155	129	153	169	147
L.R.T. O.R.	13	14	35	43	52	60	98	81	116	85	13	8

Loop resection of tubes was carried out in the new operating room at first under general anaesthesia. The drop in the output in the last two months was due to an acute shortage of anaesthetists. The non-availability of anaesthetists did not deter the motivated personnel. The challenge was accepted and as shown in the subsequent table, the numbers operated on in the new operating room gradually increased. This was possible by training Intern Medical Officers attached to the three Obstetric Units to perform post partum L. R. Ts under local anaesthesia. Since January 1975, all L R. Ts done in this new operating room have been performed under local anaesthesia.

The drop in the number of L. R. Ts at the commencement and at the end of the year is due to the non-availability of trained interns during these periods. When newly appointed these interns do not have sufficient experience to perform these operations. This could be remedied if both interns attached to a Unit are not appointed at the same time but at staggered intervals.

Influence of Obstetric Units in the L.R.T. program

As the overall figures show for 1975 (Table 5). there does not seem to be any disparity in the number of sterilisations done in the three Units. This has been due to several reasons:

1. The chief motivators are the same for all units,
2. The junior and senior house staff are about equally motivated.
3. The patients for interval L.R.T. are admitted in rotation.

TABLE V

Distribution of L.R.Ts according to Units

1975	J	F	M	A	M	J	J	A	S	O	N	D
Unit A	56	74	80	85	81	81	99	87	88	78	75	61
Unit B	31	62	65	52	39	70	90	90	89	69	68	58
Unit C	54	94	61	75	78	69	94	59	68	91	50	44
	141	230	206	212	198	220	283	236	245	238	184	155

TABLE VI

	J	F	M	A	M	J	J	A	S	O	N	D
Unit A GA	43	70	44	52	48	44	58	50	40	48	62	53
Unit B LA	13	4	35	38	32	37	41	37	48	30	9	9
Unit B GA	31	62	65	52	53	70	83	60	40	49	59	53
LA	—	—	—	—	6	—	7	30	49	20	2	3
Unit C GA	54	84	61	75	64	46	44	45	49	56	48	41
LA	—	10	—	5	14	23	50	14	19	35	2	—

Table VI shows a more detailed analysis of the figures for 1975 according to units and the use of local and general anaesthetics for such operations. This table indicates how the enthusiastic approach of one unit especially in the use of local anaesthetics for L.R.Ts could catalyse the others in a hospital to maximise the output. After a brief latent period, the desired effects are seen. The demand for the performance of sterilizations under local anaesthesia became so acute that the new operating room services had to be shared equally between the three units.

Intensity of program according to units

TABLE VII

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
A												
Del.	182	121	180	193	171	162	155	153	156	172	191	194
LRT	56	74	80	85	81	81	99	89	88	78	75	61
%	30 7	61.1	44.4	44.0	47.3	50.0	63.8	56.8	56.4	45.3	39.2	31.4
B												
Del.	204	181	219	241	233	191	197	204	188	207	227	235
LRT	31	62	65	52	39	70	90	90	89	69	68	58
%	15.1	34.2	29.6	21.5	16.7	36.6	45.6	44.1	47.3	33.3	29.9	24.6
C												
Del.	241	171	257	243	242	196	213	184	204	216	214	197
LRT	54	94	61	75	78	69	94	59	68	91	50	44
%	22.4	54.9	23.7	30.6	32.2	35.2	44 1	32.0	33.3	42,1	23.3	22.3

The figures also show that despite the use of local anaesthesia, a considerable number of L.R. Ts are still being done under general anaesthesia. This is partly due to the relative ease of their performance and the quick turnover unlike with local anaesthesia. In general, the senior house officer performs L.R.Ts under general anaesthesia whilst his junior associate, the intern, carries out these operations under local anaesthesia.

Table 7 gives the intensity of the L.R.T. programme for the three units on a monthly basis for the year 1975. This shows that in all three units the tempo of female sterilization is maintained throughout the year with minimal fluctuations. The figures include post-partum as well as interval cases. It also indicates that the intensity is greater in one unit as compared with the others, despite the fact that the interval cases are admitted on a rotational basis. The differences in intensity appears to be accentuated if the interval cases are deleted indicating that despite the employment of motivators, others in the unit too play a part in the conscription of patients for these procedures.

As the figures show there is a high incidence of post-partum sterilizations amongst those admitted for confinement to the General Hospital, Kandy. It is left to be seen whether this intensity of sterilization will be maintained in the years to come.

The use of motivators in the L. R. T. program

Midwives and nurses staffing the Obstetric and Gynaecological Units have been used as motivators since 1974. In a previous study (de Silva, 1975), it was shown that midwives had been responsible for motivation in about 35% of the patients hospitalized for confinement at the Kandy General Hospital. At the present time, the midwife on duty at the reception desk motivates the patient and her husband and obtains consent for sterilization if they have more than three children. Resistance to such motivation is minimal. In fact, some of these persons have already had a preliminary interview with either field midwives, health workers or volunteers in the field.

The provision of additional beds for L.R.Ts and close liaison of M. Os. M.C.H.

The provision of additional beds by donors and the conversion of vacant corridors without undue expense to Government to house patients for sterilization has played a significant role in this program. The provision of beds was in fact made possible by the untiring effort of M. Os M.C.H. attached to the Superintendent of Health Services Division, Kandy. Furthermors, these presons were also partly instrumental in negotiating with the District Engineer, Kandy, to speed up the renovations to the Hospital.

Utilisation of staff in programme

Table VIII shows the utilization of staff of the different units in the programme. It shows that most of the sterilisations are done by the senior house officers. They are usually done under general anaesthesia. The role of the intern officer is not insignificant. They perform L.R.Ts under local anaesthesia. Despite their heavy clinical work load, it is remarkable that these officers find time to do L. R. Ts. under local anaesthesia.

	Unit A No.	%	Unit B No.	%	Unit C No.	%	Total	Av/ year	Per month
Consultants (5)	36		59		38		133	26.6	2.2
Resident Obstetricians (2)	—		96		183		279	140	11.7
Senior House Officers (4)	569		451		441		1461	365	30.4
Interns (2)	307		146		178		631	52	4.3

The relatively minor role played by the consultant staff in the actual performance of L R Ts is due to the fact that the junior staff is actively encouraged to do these operations in order to gain sufficient experience.

The figures show that despite the large number of L.R.Ts done there is yet a reserve of manpower to meet further demands if need be in the form of consultants.

It is also interesting to note that twelve interns per year share the work load they handle so that each does on an average over 50 sterilizations under local anaesthesia. Most consultants accept that this number of L R Ts give sufficient experience to the intern to enable them to embark on an LRT programme on their own in a peripheral station. While the employment of interns in the LRT programme commenced with the opening of a new operating room in October 1974, their effective participation was realised only since January 1975 with the employment of local anaesthesia. This policy is being carried on in 1979 and it is hoped that this will be an integral part of the internship training at this Institution.

Since about 70 of the patients subjected to sterillzation (Table 10) are women within 10 days of delivery, it is possible for us to accept non-intern medical officers to be trained at this Institution in the performances of L R Ts under local anaesthesia.

This table gives the analysis percentage-wise according to parity of LRTs performed during the years 1971 to 1975. In 1971 and 1972 the percentage were obtained by analysing the first 200 loop resections, whilst during the years 1973 to 1979, the first 500 cases were used in the analysis.

One of the findings in this analysis is the appearance of an ever increasing tendency to include those up to para 3 in the sterilization program.

Another trend that is seen is the reduction in the number of mothers, para 9 and over who are sterilized. If this trend is maintained, then in another 4 to 5 years this group will no longer have any pregnancies.

The overall figures show that there is a change in the parity of women undergoing LRTs through the years 1971 to 1975. More and more women with fewer children wish to reduce their family with the use of a permanent method.

Analysis of 500 LRTs to determine time of performance of LRT after partus

Table 10 shows the distribution of 500 cases analysed according to the time of performance of the sterilization procedure. Those that belong to the group over the 10th day are mostly if not all interval cases sent from peripheral hospitals. A glance at the figures shows us that about 70% of the patients operated on at this institution are those that have had their confinement in this hospital.

It is also seen that about 50% of the patients have their tubes tied within five days of delivery so that their departure home is not inordinately delayed. Also since we have not had any maternal deaths after sterilization during the past few

Influence of parity on the L. R. T. program

Table 9 shows relationship of parity on the LRT program.

		1971	1972	1973	1974	1975	1976	1977	1978	1979 (up to Sept.)
Para	1	0.5	—	—	1.2	0.4	—	—	—	1.0
	2	6.5	3.5	5.6	5.4	4.6	6.2	5.6	7.6	3.1
	3	13.0	10.0	14.6	10.6	23.2	25.1	19.1	30.4	40.0
	4	15.5	15.5	23.0	21.6	20.2	18.1	25.2	28·1	24.1
	5	18.0	20.5	18.6	18.6	16.6	13.8	19.1	15.2	16.3
	6	13.5	16.0	14.4	13.4	12.4	15.2	13.3	8.1	7.6
	7	12.5	14.5	11.6	9.4	9.6	12.2	7.2	9.3	5.6
	8	8.5	9.0	7.0	6.6	5.8	5.4	5.4	1·3	1.1
	9	5.0	6.5	3.0	3.2	3.4	3.0	1.2	—	—
	10	3.0	3.5	1.8	2.6	3.0	1.5	1.1	—	—
	11	2.6	—	1.8	0.8	0.2	—	1.0	—	—
	12	2.0	1.5	0.6	—	0.6	—	1.0	—	—

TABLE 10

Days after partus	1	2	3	4	5	6	7	8	9	10	11–14 days	1/2–6 m	6–12 m	Over 1 yr
Number	76	50	77	56	28	23	10	9	6	12	10	19	44	80
Percentage	15.2	10	15.4	11.2	5.6	4.6	2	1.8	1.2	2.4	2.0	3.8	8.8	16.0

years, performance of these operations, after the fifth day after delivery does not appear to create any undue problems for us. It is reported by some authorities that these operations should not be carried out after the third day because of the high risk of puerperal thrombo-phlebitis and its attendant sequelae. The absence of such complications may be due to–

1. Early ambulation
2. Relatively low viscosity of the blood due to associated anaemia.
3. Relatively warm environment not making people lethargic

TABLE 11

Influence of type of procedure

Year	Abdominal	Vaginal	Laparoscopic
1973	964	—	2
1974	2299	1	—
1975	2496	2	—
1976	2498	0	0
1977	771	0	0
1978	1514	0	10
1979	1621	0	22

Table 11 shows the relationship of the different surgical techniques employed during the year 1973-76. It appears from this that by far the most popular method is abdominal tubal ligation. The other procedures are insignificant in comparison. It is recorded with regret that laparoscopic sterilization (using diathermy) had to be abandoned in 1976 owing to an unfortunate accident leading to a death. Death occurred following an intra-abdominal explosion during diathermy coagulation of tubes using Nitrous oxide. The procedure has now been recommenced with the use of carbondioxide. However the numbers so sterilized are still insignificant.

TABLE 12

Influence of other surgical units in the LRT program

Year	O & G	Surgery
1973	961	5
1974	2292	8
1975	2492	6
1976	2498	0
1977	771	0
1978	1514	0
1979	1621	0

As shown in this table the influence of the four surgical units of the Kandy General Hospital on this program is insignificant.

Summary

The trends in female sterilization at the General Hospital at Kandy are discussed. Female sterilization appears to be quite popular among the people of the Kandy District and about 30% of those confined are tubectomised. An increasing number of these operations are performed by Interns, under local anaesthesia. The stimuli as well as the constraints influencing the program are highlighted.

Acknowledgements

We wish to thank the Medical Superintendent of the General Hospital, Kandy Dr. R. P. Rajapakse for allowing us access to the medical records. We also wish to thank Drs. W. J. B. Karunaratne and R. Ramalingam for allowing us to use the figures from their respective units in this analysis.

We would also like to record with pleasure the interest taken by all those present and past interns, senior house officers and resident obstetricians without whose cooperation this program would not have been a success.

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Evaluation of Contraception - A Critical Review

by

Mahasara Gunaratne*

In the past decade many millions have been protected against unwanted pregnancy due to rather rapid advances in contraceptive technology. The objective of research into contraception is clearly the development of a variety of safe, acceptable and effective methods for the regulation of human fertility. The pioneers in this field were concerned with effectiveness alone but recent work seems to concentrate on minimising health hazards associated with contraceptives thereby improving overall acceptability. It is in the evaluation of side-effects, particularly those of a subjective nature that there is much disagreement. Though most modern contraceptives are, in general terms, regarded as reasonably effective, the disappointing feature for the acceptor and clinician alike is the very diverse views expressed on acceptability.

The last few years has seen the manufacture of numerous 'brands' of contraceptives with all their accompanying claims of effectiveness. A careful study of the literature will show considerable differences between the results of different trials from different centres. Manufacturers should take a large share of this blame for 'polishing-up' results to make them more acceptable to customers. Still others attach undue significance to statistical procedures and sometimes ignores them when it suits them. It is therefore pertinent that the search for an Internationally recognised or standard evaluation method should be developed step-wise with advances in technology. In the interpretation of results, with all due regards to statistical procedures, a background of rational thought is essential before valid conclusions are drawn. This fact must be emphasised at the beginning.

This paper is a critical analysis of the current procedures adopted for evaluating and reporting the results of contraception trials and makes a plea for uniformity so that valid conclusions can be drawn from the results of different centres.

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General considerations

As a preliminary, contraceptive effectiveness should be confined to samples of proven fertility. In Sri Lanka, where the majority of acceptors are parous, this is not a problem. In Western populations however there is a significant number of nullipara seeking contraception. For them the method of choice has been the 'pill' but the intrauterine device (IUD) is also prescribed. In our practice as well we come across newly-wed couples using the 'pill' to postpone pregnancies, but such instances are few.

In Sri Lanka emphasis is in a post-partum contraception programme and nearly all are agreed that the first few months of the puerperium is a period of lowered fertility, Extended periods of lowerid fertility is to be expected in communities that resort to breast feeding for long periods. In our clinic practice lactational amenorrhoea up to 12 months on an average is not uncommon. Therefore in the evaluation of of a post-partum trial either with the 'pill' or the IUD this factor must be borne in mind. Studies have shown (Mukherjee, Dey, Roy, Sen, and Bannerjee 1967) that the IUD by itself can evoke a dysfunctional bleeding of an anovular type. The results of this group as a whole must therefore be mathched with the performance pattern of their parous sisters.

The other factors, of a general nature, to be considered are the use of adjunctive methods of contraception, the interpretation of continuation rates, multicentric studies and the varying results between selected clinical and large-scale field trials. To each of these must be added factors of doctor and patient motivation that may have prevailed in computing results (Bernard 1969).

Traditional and Barrier methods

Today the tendency for doctors to advocate the use of 'traditional' methods like the safe-period and coitus interruptus is fast

dwindling in preference to the newer and more effective ones. From time to time the literature reports the results of trials of these methods often using spermicidals as adjuncts to the methods that are really being tried out. Extreme caution is therefore necessary in interpreting results of barrier and 'traditional' methods where spermicidals are used as adjuncts.

Very little data is available on the use of the vaginal diaphragm, an extremely inconvenient an outdated method. In a select study (Walpola 1970) it is reported that 20-25 per cent of patients 'seem to be content' and showing continuation of this method. However studies such as these do not describe a specific methodology nor demographic characteristics nor failure rates and carefully omits the probable use of spermicidals. In them it is therefore likely that more than one method is practiced without the knowledge of their physician. Furthermore the results of such a carefully selected sample can hardly apply to the population at large.

The practical, inexpensive condom, widely used all over, is recieving attention in developing countries purely as a result of shrewd commercial marketing. In preference to the outdated barrier methods mentioned earlier the condom seems to be more acceptable but it is surprising that studies pertaining to its effectiveness have been neglected. While a perfect barrier appears to be the ideal contraceptive, failure with condom usage deserves careful analysis. By modern testing standards the British Consumers Association found that in 1966 the widely available brands contained up to one percent defects in them. But as is accepted condom failure is not only associated with mechanical defects in its manufacture and therefore effectiveness and acceptability are difficult to interpret because the so-called 'facts' on condom usage are based more on impressions, gossip and heresay. Even estimating condom usage by itself is difficult because manufacturers seldom release production figures. Thus the results of highly selected trials connot once more be generalised to an estimated 19-21 million users. The responses obtained to questions in these trials often highlights the inexact nature of answers to details of condom usage. Condoms are frequently used in combination with other methods-rhythm and spermicidals, and many communities today resort to pregnancy termination should conventional contraceptives fail. Thus failure rates must be viewed with caution.

Computing Pregnancy Risk

The traditional measure of contraceptive effectiveness has been the pregnancy rate per 100 women years of use computed according to Pearl's formula. Pearl's formula assumes a constant pregnancy rate during use but in practice it has been found that rates vary with the length of observation. Thus Pearl's formula is no longer considered an effective means of measurement and these difficulties are overcome by the Life-Table method (W.H.O 1968) which permits valid comparisons in nearly all parameters irrespective of the periods of observation. The selectivity of acceptors with respect to fecundability would yet influence results although this in any case is unavoidable. Where the acceptors are demographically heterogenous standardisation of Life Table rates according to age, parity and race is desirable.

Lost to Follow-up (LFU)

It is regretted that in most contraception studies pertaining to Sri Lanka seldom is mention made of the percentage of cases lost to follow-up (LFU). The results of a study with a LFU above 20 percent cannot be accepted according to modern standards of evaluation, The computing procedure for LFU cases assumes that the contraceptive habits of these cases will continue to be similar to those cases whose follow-up is complete. Ideally two separate procedures must be made; one which assumes that the performance of the LFU cases remain unaffected and the other which assumes that they all discontinue the method. The truth will lie between these values.

Comparative Studies of the IUD

Comparative studies between the 'pill' and the IUD has always been an interesting exercise. The wide disparity in continuation rates for the two is probably a resuit of variable influences namely sociologic, demographic and patient motivation. The younger age and lower parity of women choosing the 'pill' probably accounts for the somewhat higher rates of closure compared to women choosing IUDs. The latter seem to do so even after they have already attained their desired family size (Mauldin 1968, Lippes and Ogra 1969).

The flood of literature on the newer or 'second-generation' devices varies from highly subjective impressions to carefully constructed clinical trials. Unfortunately for the population at large

the results of the latter group tend to be reported long after the clinical impressions have been publicised.

A factor that is unavoidable in the 'pill' versus IUD debate is the personal bias of the doctor. The doctor who is commited to the IUD ie. one who is convinced of its overall value and who has prescribed it to a sizeable population will strive to achieve good continuation rates by regular follow-up and close supervision. He may well discourage some from taking the 'pill'. One the other hand certain clinics can produce better continuation rates for the 'pill' than the IUD, or even rates may alter over a period of time at the same clinic when personnel are changed etc proving the factor of the existing personal bias for method. However there is universal agreement that the continuation rates for the IUD are superior to the 'pill'. The most interesting aspect of this exercise is the comparison of rates when patients change from one to the other at their own request.

Multicentric Studies

Superior results from the more specific or selected clinic trials compared to large scale field trials is to be expected. The better results of the former is bound together closely with the skill of personnel when avoidable factors associated with contraceptive failure is recognised (Gunaratne 1972). Whenever feasible a *probability sample* whose results may be reasonably generalised to the whole sample should always be used in preference to special samples.

The use-effective rates from multicentric studies represent at best a compromise of the rates at different centres which are known to vary a great deal. However multicentric trials may be necessary for more than one reason. Firstly they are necessary to obtain larger samples and secondly the subjects would be more representative of the population under study. But the prime objection, and a very valid one, is that the process of statistical averaging out has little or no relationship to what happens in reality. One thing appears to be abundantly clear viz. for IUDs the same device fitted by different teams among different groups of acceptors have differing records of success or failure (Snowden 1974).

However the variation of event rates do not invalidate the collection of data from more than one centre. On the contrary it is preferable to collect data from as many centres as possible but the same procedures for recording and analysis must be used. In controlled clinical trials constraints as to the specificity of the population selected for the trial do exist. The sample is more carefully choosen than in a field trial. The motivation and skill of personnel, the rigorous follow-up procedures and the closer scrutiny in a clinical trial are factors seen in contrast to event rates in large field trials Nevertheless the results of a selected clinical trial is often the determining factor in deciding whether or not a field trial should in fact take place.

Double-blind Studies

Well designed double-blind studies are necessary in determining the optimum IUD size or type in terms of relative effectiveness and acceptability, The same is true for oral contraceptives but the problems in double-blind studies with the 'pill' are no different to those that are seen in other pharmaceutical studies. But such trials with the IUD pose special problems which must be recognised and rectified if the trial is to be regarded as truly double-blind. In these trials neither the physician nor acceptor should be aware of the nature or property of the device being used. This, for the physician, in the case of the IUD is difficult to overcome due to the identifying property of the marker or 'tail'. Therefore for a true double-blind study the manufacturer should provide devices of uniform appearance to overcome any possible physician bias. How often has this been done in reported double-blind studies with the IUD ?

Contraception in Nullipara

In the belief that nullipara are not suitable candidates for the IUD clinicians tend to recommend oral contraceptives instead. Neverthless when nulligravida cannot be protected by other methods for some reason or the other one has no choice but to recommend the IUD. Besides the question of proven fertility, evaluation of IUD performance in the nullipara can be misleading because being young their subsequent pregnancy and expulsion rates would be higher. There are difficulties of inserting an IUD into the nulliparous uterus and demands for removal on account of abdominal pain are greater. Consequently the smaller device is choosen in preference to the larger. But young age and small device by themselves tend to increase pregnancy and expulsion rates. One other evaluation problem in this group is the difficulty of obtaining a sufficient sample of nullipara for IUD trials. The group

will therefore have to be studied as a whole and matched with parous women on the basis of age, type and IUD size. But certain combinations of age, type of device and size will be uncommon among parous women. Since the neverpregnant women are a young group it will not be surprising that their matched parous sisters average only about two births.

The important aspect of IUD performance in the nullipara is an assesment of device tolerance in terms of uterine size. Removals on account of pain in this group should be carefully analysed taking care to exclude preinsertion pain and dysmenorrhoeic cycles which are not uncommon. Due consideration of uterine size and other physical factors seems to be rational in the correct choice of the IUD (Hasson 1974, Davis and Israel 1964).

Side-effect Assessment — Subjective impressions

It is in the assesment of side-effects, particularly those of a subjective nature, that many difficulties are encountered. This is particularly true for trials with the 'pill'. That the oral contreaceptive is a very succesful means of preventing pregnancy is an acknowledged fact. Consequently most trials now are directed towards testing for undesirable effects. Side-effects have been so well publicised in technical and not-so technical journals that the patient is as aware of them as her physician is. Side-effects and associated health hazards of a serious nature have been minimised with the advent of lower doses of oestrogen. However side-effects and health hazards still continue to be the principal reason for discontinuation.

The disturbing feature appears to be the considerable variation in the incidence of side-effects reported by different investigators using the same agent. These reports seldom disclose the methodology of data extraction and in specific the method of interrogation viz. whether the patient voluntered the presence of symptoms or admitted having these symptoms only after direct questioning.

Techniques Of Interrogation — Probing Vs Non-probing

Since the majority of side-effects are of a subjective nature the interviewing technique employed should employ probing (P) as well as non-probing (NP) procedures. In such a trial described by Statzer (1968) it was clearly shown that the subjective or NP interview technique produced a much lower reporting of side-effects. Recall of the true incidence of side-effects depends on memory and perception and hence too long an interval since the start of the trial is undesirable. Further one must consider carefully the presence of similar symptoms in pretherapy control cycles for an accurate evaluation as possible of the incidence of side-effects.

Post-Coital Contraception

In recent times there has been an increasing interest in post-coital contraception and it will not be long when demands will be made in certain situations such as unprotected intercourse and in exigencies such as rape. The results of the original experiments with large doses of oestrogen are subject to criticism. Pregnancy does not invariably follow one or two acts of intercourse and hence the claims of success could be overestimated. The fact a woman does not become pregnant after intercourse does not mean that a successful contraceptive technique has been employed.

The reasons for uncertainity in this group is attributed to unestablished fertility in the very young (in cases of rape), and in nearly every case viable sperms may not have been demonstrated in the cervix. In some instances there is no definite evidence to time coitus with ovulation. Finally the fact that a patient does not become pregnant is of less positive significance than the occurence of pregnancy. Failures are attributed to inadequate dosage, incorrect timing and absorption defects due to vomiting with the use of oestrogens.

Menstrual Regulation (MR)

Menstrual Regulation (MR) trials are subject to criticisms of a very similar nature. The success of MR is only apparent because of the unreliability of pregnancy diagnosis at very early periods of gestation. The percentage of positive pregnancies at 28–31 days of amenorrhoea being only 35 per cent (Edelman, Brenner and Goldsmit 1974), it was found that only 38 percent of subjects were subsequently pregnant.

Failure rates would normally be calculated by dividing the number of continuing pregnancies by

the total number of procedures. As some of the women undergoing MR are not pregnant the recommended formula for the failure rate is

$$\frac{\text{No: continuing pregnancy}}{\text{No: identified as pregnant}} \times 100$$

The denominator includes pregnancies which are identified as a result of examination of uterine contents as well as at a subsequent follow-up Retained products of conception requiring a second aspiration or a curettage are sometimes erroneously considered as delayed complications but are not included in the calculation of failuer rates.

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"The Missing Loop"

A prospective study utilizing radiography in determining the location of intra-uterine contraceptive devices (I.U.D), when marker tails are not visible at the external os.

by

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Introduction

The fact that there are 15 million users of the Intra-uterine Contraceptive Device today, half of them in the developing countries, (Huber-1975) is ample proof of its effectiveness.

The popularty of the I. U. D. as a contraceptive device in Sri Lanka could be judged from the observation that in 1973 alone there were 27,500 new acceptors of this method - an acceptor rate of 28.7% of all methods used. (Nortman 1974).

A common problem encountered at the Gynaecological Clinic is that of the "missing threads" of the I. U. D. When the threads are not palpable vaginally or not seen at the external os (on speculum examination), accurate localisation of the I. U. D. becomes of urgent importance, if the patient is to be reassured that she is not at risk of becoming pregnant.

This is a prospective study on the localization of the I. U. D., in cases where the threads of the device were not felt, utilizing a technique of inserting a second I. U. D. followed by radiography.

Material and Mathod,

This series was compiled by collecting data from admissions to the University Gynecological Unit, at the teaching hospital in Kandy during the period March 1975. to August 1975. There were in all, 28 patients investi gated for absence of the marker tail of the I. U. D. Of this figure, 21 patients were directly admitted through the out-paients' clinic of this hospital, whilst seven were referrals from peripheral institutions.

When a patient with symptoms referrable to a missing advice is seeen; a detailed history is taken especially with regard to possible expulssion of the I. U. D. or a period of amenorrhoea. A complete physical examination including a pelvic examination is done and if the threads are not palpable per vaginam or visible at the external os and pregnancy is excluded, a second device, namely a Lippes loop size D is insterted and an anteroposterior view of the pelvis is taken. (The second I. U. D. is removed on viewing the x-ray film.

In determining whether the first I. U. D. is intra-uterine or not, the degree of *Superimpostion* of the marker device on the orginal one is taken as the most important criterion, the posture and configuration of the orginal device were of secondary consideration.

The I. U. D. was considered to be INTRA-UTERINE, if the marker device was superimposed on it. Almost completely (or nearly so) due to allowance being made for any alteration in the posture of orginal I. U. D.

The I. U. D. was considerd to be EXTRA-UTERINE, if the marker device did not overlap it or if it was displaced away from it. Such localisation was feasible because we were dealing exclusively with Lippes loops.

No other diagnostic aids like hysterography or sounding of the uterine cavity were done, to confirm or refute the radiological diagnosis.

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Analysis of findings.

The presenting complaints of the patients were as follows:-

Inabilityy to feel the threads 19
Threads snapped at attempted removal 2
Requests removal and sterilization 5
Persistent vaginal bleeding 1
Lower abdominal pain 1

Following admission, six of the 23 patients not admitted for sterilization per se consented (after motivation) to surgical sterilization.

Of the five admitted for sterilization, four were not aware of the absence of the threads vaginally. The other stated that she had been unable to palpate the threads for sometime, prior to hospitalization, but was not unduly concerned about this.

The demographic characteristics and duration of insertion of the loop are given in the tables below.

The ages ranged from 21 to 48 years, the average age being 32.6 years (Table I)

TABLE I.

Age distribution.

Age group in years	Number	Percentage
20 - 25	3	10.7
26 - 30	8	28.6
31 - 35	8	28.6
36 - 40	5	17.9
41 - 45	3	10.7
over 46	1	3.5

It is noteworthy that 60.7% of I. U. D users were in the over 30 year age groups, in whom an initial surgical sterilization might have been a better procedure.

TABLE II.

Distribution of parity.

Parity	Number	Percentage
1	4	14.3
2	4	14.3
3	4	14.3
4	8	28.6
5	3	10.7
6 - 8	4	14.3
9 - 10	1	3.5
over 10	0	0
Total	28	100

It is significant that only 8 patients in this series had less than three children (Table II). Most of them (71.4%) were gravida three and over in whom a permanent method of contraception would have been preferable. The need to motivate the patients to accept such a method must be emphasised. Advice on a method, that is most suited for a particular patient, is essential, if any programme on fertility control is to be successful.

TABLE III.

Age of the last child amongst the I.U.D. users in the series.

Age of last child	Number	Percentage
0 - 1	1	3.6
1 - 2	6	21.4
2 - 3	6	21.4
3 - 4	7	25
4 - 5	4	14.3
over 5	4	14.3
Total	28	100

From Table III and IV, it it seen that the I. U. D. has:-

1. proved to be quite an effective contraceptive in these women
2. been used by a significant number of high parity women with success.

TABLE IV.

Duration (in years) of I.U.D. insertion in the series.

Duration after insertion	Number	Percentage
0 - 1	2	7 1
1 - 2	7	25.
2 - 3	6	21.4
3 - 4	5	17.9
4 - 5	5	17.9
over 5	3	10.7
Total	28	100

Two patients in the series on investigation were found to be pregnant and were thus excluded from its study.

TABLE V.

Radiographic localization of I.U.D. - Results

Number Intra-uterine	24	85.7%
Number Extra-uterine	4	14.3%

Management.

Once a diagnosis of the missing loop was made, the management depended on its location. The contemplation of a surgical steriliztation in the patient, also influenced management to some extent.

Intra - uterine loops.

In general, when the I. U. D. was diagnosed to be intra - uterine and sterilization was not contemplated, the patient was prepared for vaginal exploration of the uterus under general anaesthesia.

The uterus was sounded to confirm or refute the presence of the device the cervix dilated to 10 Hegars and the cavity explored If this failed to locate and remove the device, the uterine cavity was curetted systematically, this manoeuvre being most often successful.

If this method failed to remove the device it was thought that the I. U. D. was embedded in the myometrium. A laparotomy was performed via a 2.5 cm. transverse subumbilical incision. The peritoneal cavity was explored, particularly the utero-vesical and recto-uterine pouches· If this failed to reveal a translocated I. U. D. in the peritoneal cavity, then the uterus was gripped between the thumb and index finger of the left hand and a 2 mm. stab incision made on the funds with a No. 11 scalpel. The device was extracted by the introduction of an artery forceps through this incision. The incision was closed by a figure of 8 suture. using No. 1 catgut on a round bodied needle. There were no failures using this method.

In those desiring a sterilization this was carried out concurrently.

Loops diagnosed as being intra-uterine.
Summary of management.

No. diagnosed	24
No. removed by vaginal exploration	21
No removed by laparotomy after failure- of vaginal exploration	2
No removed by initial laparotomy	1

These figures indicate that in most instances the missing I. U. D. can be removed by a primary procedure consisting of dilatation of the cervix and removal of the I. U. D. In only two instances was this method not succssful. In both these cases, the loop was considered to be embedded in the myometrium.

In one initial laparotomy was resorted to as there were 3 separate fragments of the loop which were considered to be intra-uterine on x-ray examination. The management of this case might be criticised on the grounds that no vaginal exploration was attempted, but it was felt that an abdominal approach would be the safer procedure in this particular insiance.

Extra-uterine loops.

There were four instances where the device was considered to be extra-uterine. These were removed at laparotomy using a small (2.5 cm.) transvease sub-umbilical incision as described earlier. In two patients, the device was found lying free in the peritoneal cavity, in one it was partly embedded in the peritoneum of the Pouch of Douglas. They were all easilly removed. The site of the perforation in the uterus was visible in only two instances. In the other case, the perforation probably had occurred sometime ago and was not visible.

The fourth case whose brief history follows is interesting. She was a 28 year old multipara who had an I. U. D. inserted one year after delivery of her third child. There had been no self examination to determine the presence of the threads. She became pregnant two years after the I. U. D. insertion and had a normal vaginal delivery in hospital. The device apparently was not expelled at partus. Being unaware that the first device had not been expelled, a second I. U. D. was inserted, six months post-partum. She sought treatment at our Unit for inability to feel threads of the second device. On this occasion a third (marker) I. U. D. was inserted and an x-ray taken. X-ray revealed the presence of three I. U. Ds in the pelvis. Hence in this case, there were two missing loops. At laparotomy, one device was partly protruding through the anterior uterine wall near the fundus, whilst the other was found embedded in the omentum. Both were removed without difficulty. A portion of the omentum which was excised with the loop "in situ" was examined histologically. There was no evidence of inflamatory change or the presence of endometrial tissue.

There were no post operative complication in any of the patients, following laprotomy and removal of the I. U. D.

Evaluation

The table given below shows the correlation between radiographic localization and the ultimate findings.

TABLE VI.

Correlation between radiographic diagnosis and the findings at Operation.

Radiographic Diagnosis		Uterine Cavity.		Myometrium		Peritoneal cavity	
		No.	%	No.	%	No.	%
Intra-uterine	24	22	91.7	2	8.3	0	0
Extra-Uterine	4	0	0	0	0	4	100

Of the 24 cases in whom the I. U. D. was diagnosed to be intrauterine by radiographic criteria, in 22 (91.7%) the device was located in the uterine cavity while in 2 (8.3%), it was found embedded in the myometrium. In other words, there was a 100% accuracy by radiographic diagnosis, which was confirmed at operation. However, this method of localization of the missing device fails to differentiate between loops lying free in the uterine cavity and those lying embedded within the myometrium.

In the latter group, it's presence in the myometrium was suspected when primary exploration vaginally failed to remove it, whilst a stab insision on the uterine fundus at laparotomy removed it with ease. The device must, thus have been embedded in the myometrium. This view is supported also by the findings of Ratnam and Tow (1970) in their study.

Removal of devices embedded in the myometrium often require a laparotomy whatever the mode of diagnosis employed. Hence inability to distinguish between the device lying in the uterine cavity and that in the myometrium only entails a primary vaginal explorative procedure before proceeding to laparotomy. Such a procedure, in this series, did not cause an extra inconvenience to the patient. It also did not influence the patient's duration of stay in the hospital, where tubal ligation was also performed.

In those patients where a stab incsion of the uterus was not combined with a sterilization procedure, the possibility of dehiscence in a subsequent pregnancy must be considered. Although the dehiscence of such a scar, cannot be totally discounted, the risks would probably be of the same order as a myomectomy incision — which is less than that with a lower segment scar.

In the group, where the device was diagnosed to be extra-uterine, laparotomy findings confirmed the diagnosis in all cases, thus giving an accuracy of 100%. The site of perforation was evident in 2 cases inspite of the fact that the loop had been inserted several years previously.

This probably indicates that translocation of I. U. Ds does not always occur at the time of insertion, but could take place subsequently, especially in post-partum insertions.

The perforation rate varies from a low O - 1.2 perforations per 1000 insertions as in the co-operative statistical programme (Tietze 1970) to a high 7.0 - 8.7 per 1000 in the Singapore study (Kanagaratnam 1968). Actually this rate may be much higher, as most perforations are a symptomatic and some perhaps are never detected unless found incidentally at laparotomy. In some cases of perforation, although the I.U.D. is lying wholly or partially outside the uterus, the threads may be visible at the external os (Ratnam and Tow, 1970 and Burnhill and Burnberg 1967). This is true in our experience too, and if moderate traction on the threads fails to dislodge a device, the possibility of perforation or embedding must be considered. It is thus justifiable under these circumstances to inroduce a second I.U.D. and carry out a plain X-ray of the pelvis as described.

There appears to be some controversy as to whether linear devices such as Lippes loop should be removed after translocation. Rudel et al (1973) and Mishell (1974) are of opinion that although the contraceptive effect is lost, a perforated linear device is of no risk to the patient and therefore does not warrant removal. However, Chakravarthy and Mondal (1968), Cibils and Moragne (1971) and Eposito (1966) recommended its removal. We too share the view that once perforation of a device is diagnosed, it should be removed. Beside the risk of pregnancy, it is extremely difficult to convince a woman that a device will do no harm in her abdomen.

Other methods available for localization of the missing I. U. D.

Jessen et al (1963), Oppenheimer (1959) and Wilson (1965) have reported the use of radiographs in the diagnosis of suspected perforation of the uterus. However, Lehfeldt et al (1965), Nakamoto (1965) are of opinion that a plain

antero-posterior view of the pelvis is of no value in locating the device. They believe that the size and position of the uterus vary, so that the results could be frankly misleading.

X-ray examination of the pelvis with a radio-opaque catheter in the uterine cavity as demonstrated by Clark (1938) and subsequently advocated by Ledger and Wilson (1966), is more reliable provided anteroposterior and lateral views are obtained. This method is satisfactory but is too time consuming and cumbersome for routine use.

Friedman and Pine (1966) used hygterograms to confirm the diagnosis of translocated devices. But such a method is considered expensive in a country such as ours with a poor economy.

Sounding of the uterus for the presence of the divice has been suggested by Rosen (1965), and Hall (1966, 1967), but this procedure by itself seems inadequate in most cases. Its usefulness lies as an adjunct to other methods of localization.

The use of the biolocator, an electronic amplifier, in the location of intra-uterine devices was first reported by Eric Rosen in 1964. Its use as reliable instrument has also been documented by Fuchs et al (1965), Ratnam and Yin (1969) Rimdusit and Mishell (1968). However, they have reported a number of false positives especially in untrained handsas well as the inability to detect partial perforations of the uterus. Moreover the instrument is expensive and not available to us.

The Novak's aspiration curette has also been used to extract devices when the marker tails are not visible (Ratnam and Tow 1969). Its chief advantage over other methods is that it requires no anaesthesia and could therefore be carried out as an outpatients' procedure. However, more information regarding its use has to be forthcoming before it finds general acceptance.

We also cannot perceive the aspiration of a device deeply embedded in myometrium without its dangers.

Summary

A study of 28 patients presenting with "missing threads" of the I. U. D. is presented. A definite radiographic diagnosis as to the location of the I. U. D. was arrived at, in all cases after insertion of a second marker device.

There was a 100% correlation between the radiologic localisation and findings at exploration or laparotomy in the 24 cases that were considered to be intra-uterine. With this type of localisation however, we were unabie to distinguish between those devices which were in the uterine cavity and those embedded in the myometrium.

There was also a 100% correlation between the radiographic diagnosis and the findings at laparotomy in the four cases that were considered to be extra-uterine.

The chief advantage of this method of localisation besides accuracy, is its simplicity and economy.

Although our series is small to be statistically significant, we have attempted to show that such a method of radiographic diagnosis is reliable with minimal inconvenience to the patient.

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Haematometra in a Rudimentary Horn Associated with Pelvic Endometriosis

by

P. H. D. H. De Silva*

Summary

Two cases of haematometra associated with endometriosis in a non-canalized rudimentary horn of a bicornuate uterus have been presented, as similar reports in the world literature have been exceedingly rare.

The presenting symptoms with anatomical details discovered at operation are discussed.

Introduction

A variety of complications in both gynaecologic and obstetric conditions arising in a rudimentary horn in a bicornuate uterus have been well documented in the world literature. Nonetheless, it must be conceded that unless this causes a serious and acute abdominal catastrophe, the presence of an atritic horn will remain obscure. The most remarkable feature in this type of anomaly is that, a woman may go through her entire reproductory period without any complications, either during menstruation or during pregnancy, as the majority of the horns are ill-developed, with the endometrium infantile and hence not reacting to hormones. This was clearly illustrated by the 11 cases of rudimentary horn (paper to be published) detected by the author, among, a total collection of 322 cases of uterine malformations, personally discovered during a period of 7 years at the Base Hospital, Kegalle-Sri Lanka. It is interesting to note that these patients have had 41 pregnancies among them without any untoward complications, attributed to the anomaly.

However, the presence of such a malformation becomes clinically significant only if, it is the site of a haematometra or a gestation, as most of them are non-canalized and hence non - communicating with the normal uterine horn. Though the development of haematometra in a rudimentary horn have been reported by several authors, since it was described by Mauriceau and Vassal in 1669, only a few cases have been described to be associated with endometriosis. The first case of a uterine horn of a duplex uterus menstruating into the abdominal cavity due to the absence of a communicating channel was described by Vernaglin in 1948. Since then, according to Carpenter (1952) no similar case has been published, till they described a case where a laparotomy was performed for pelvic endometriosis and a tumour of the left ovary. Yet one fails to comprehend the reason for the rarity of incidence of endometriosis associated with haematometra, in view of the fact, that any collection of menstrual blood in a non-canalized horn is more likely to spill over via the fallopian tube into the peritoneal cavity.

Since there appear to be a dearth of such clinical reports, I would consider it valuable to record the presenting symptoms and the pathological findings of two cases of haemotometra associated with chocolate cysts of the ovary that were successfully treated by the author.

CASE REPORTS

Case I

Miss. W. A. R. was admitted to Hospital on 10.3.69 with a history of lower abdominal pain of 1 year's duration. She was 17 years old.

Though the pain was present throughout, it remained as a "dull ache", confined to the left side of the abdomen.

She reached menache at 14 years. The menstrual periods were regular, once in 30 days lasting 3 - 4 days. She had dysmenorrhoea at every period but felt it to increase in severity on the 2nd and 3rd day. The lower abdominal pain too appeared to worsen at this time. Within the past 6-7 months, she had felt a lump on the left lower abdomen, which appeared to be progressively increasing in size. In addition she noticed the lump to be painful and tender during the menstrual cycle.

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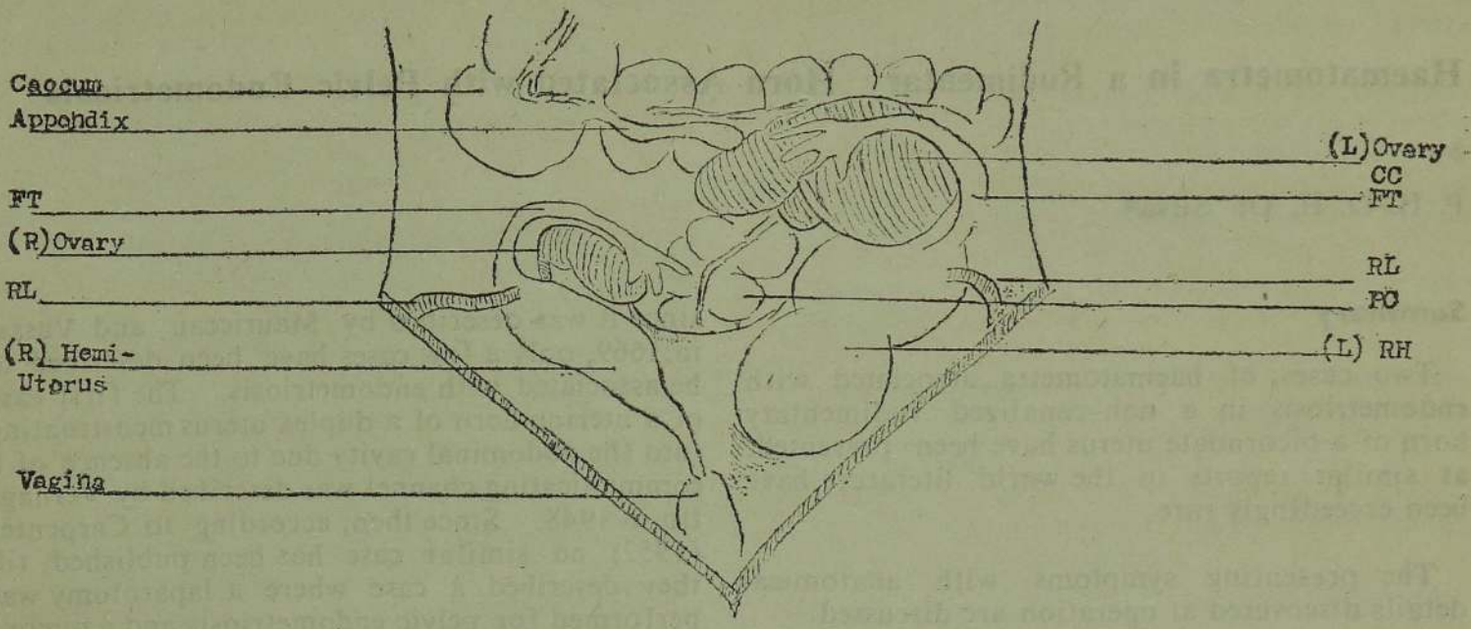


DIAGRAM NO. 1.

Legend - DIAGRAM NO. 1

As seen at operation - Appendix and gut adherent to the chocolate cyst of the left ovary. Right Rudimentary horn is shown communicating with the vagina. Blind left horn is dilated to form a Haomata.

FT - Fallopean Tube; RL - Rc
RH - Rudimentary Horn PC - Pc
CC - Chocolate Cyst.

She was of average stature. Secondary sex characterislics were present.

General Examination did not reveal anything abnormal.

Abdominal examinatian revealed a mobile lump arising from the pelvis and extending on to the left iliac region. It was mobile, tense but not tender. The shape was irregular and margins were not clearly defined.

Pelvic Examination — Vulva and vagina were normal. Hymen was intact but was found to be lax admitting one finger with ease. Vaginal Examination done with one finger, revealed the cervix to be small, nulliparous and firm.

The uterus was anteverted and small A tense cystic lump was felt through the left fornix, apart from the uterus, but continuous with the lump palpated abdominally. It was mildly tender. Mobility was limited, surface was smooth. The right fornix was empty.

A diagnosis of a tubo-ovarian mass was made and laparotomy performed on the next day.

At Operation — the uterus though smaller than normal was displaced laterally to the right pelvic wall Ovary, fallopian tube and round ligament appeared to be normal.

On the left a large globular rounded tumour was detected separate from the uterus adherent to bowel and appendix (as shown in diagram 1). The globular rounded mass was found to be a haematometron of the left ill developed horn with a haemo salpinx with chocolate eyst of the ovary. The blind lower pole of the horn was rounded off and appeared to be separate from the dome of the vagina and the right horn by a thick peritoneal fold The ureter and the kidney on the left side appeared to be absent. The kidney on the right was palpated to be much larger than normal.

A hemihysteretomy and salpingectomy with resection of the chocolate cyst, with the conservation of 1/3 of the ovary, was performed

(DIAGRAM 1)

Macroscopic appearance of specimen

On opening into the rounded mass, it was noted to contain inspissated altered menstrual

blood. This had also extended into the Fallopian Tube at its upper pole.

She made an uneventful recovery,

Dysmenorrhoea was significantly less.

Intravenous Pyelogram — Congenital absence of the left kidney.

Large duplex kidney right side. Fusion of the ureter of the upper element occurs at the joint of margin of the lower ureter (adjacent to the renal pelvis).

Examination at Hysterography, it was noted that the cervix was shifted more to the right side of the dome of the vagina.

Hysterogram

The uterine shadow is seen lying horizonlally and shifted to the right. The cervical canal and the Isthmus appear to be narrow. The tube is patent.

Microscopical Examination

Specimen of ovary - appearances are those of a chocolate cyst of the ovary.

CASE 2

Miss. Y. A. young girl of 19 years of age was admitted to the Gynaecological ward with a history of lower abdominal pain of 8 months duration. The pain appeared to remain as a continuous dull aching discomfort, confined mostly to the left lower abdomen. Nevertheles, she had noticed during the last few months that periodically once a month for about 3-4 days the pain appeared to increase in severity. To obtain relief from the pain she was forced to resort to bed rest and mild analgesics.

She had never experienced any "visible menstruation",. The patient was of average build.
General examination did not reveal any abnormality.

Secondary sex characteristics were well developed.

Abdominal Examination — revealed a palpable lump size of a 6 week pregnancy in the lower abdomen, situated left of the midline and arising from the pelvis. The lump was tense and tender. Mobility was limited.

Pelvic Examinaion — Vulva was well developed. But the vaginal introitus was obliterated at a depth of about 1" by a "septum". This appeared to be thick and coloured pink. There was no visible impulse on straining, coughing or on pressure over the adbominal lump.

Per rectal examination indicated no bulge of the vagina into the anterior wall of the rectum. The pelvic lump was palpated anterioly in the pouch of Douglas. In view of these findings a diagnosis of crypto menorrhoea with an imperforate vagina was made and excision of the septum was decided on. At operation, the septum was excised by a cruciate incision and vagina opened into. But this procedure did not release any menstrual blood as anticipated.

Therefore a vaginal examination was proceeded with. This revealed that the vagina to end blindly at a depth of about 2½ inches. There was no cervix felt at the dome of the vagina, The lump in the abdomen was easily accessible to the finger in the left fornix. Hence a wide bore needle was directed via the fornix into the lump, to attempt aspiration, but without success.

The patient was sent back to the ward.

An Intravenous Pyelogram — was performed the next day. This revealed:-

Left renal shadow not visualised.
Right normal Pelvicalyceal detail.
Right renal shadow enlarged consistent with compensatory hypertrophy.

While awaiting in the ward i.e. 23 days of admission, the patient developed severe abdominal pain in the left iliac fossa with marked tenderness over the lump. The pain was so acute, that the patient had to be frequently sedated with Pethedine for 3 days. From the 4th day the pain gradually subsided and the patient appeared to be comfortable in bed. There was no evidence of any bleeding per vaginam.

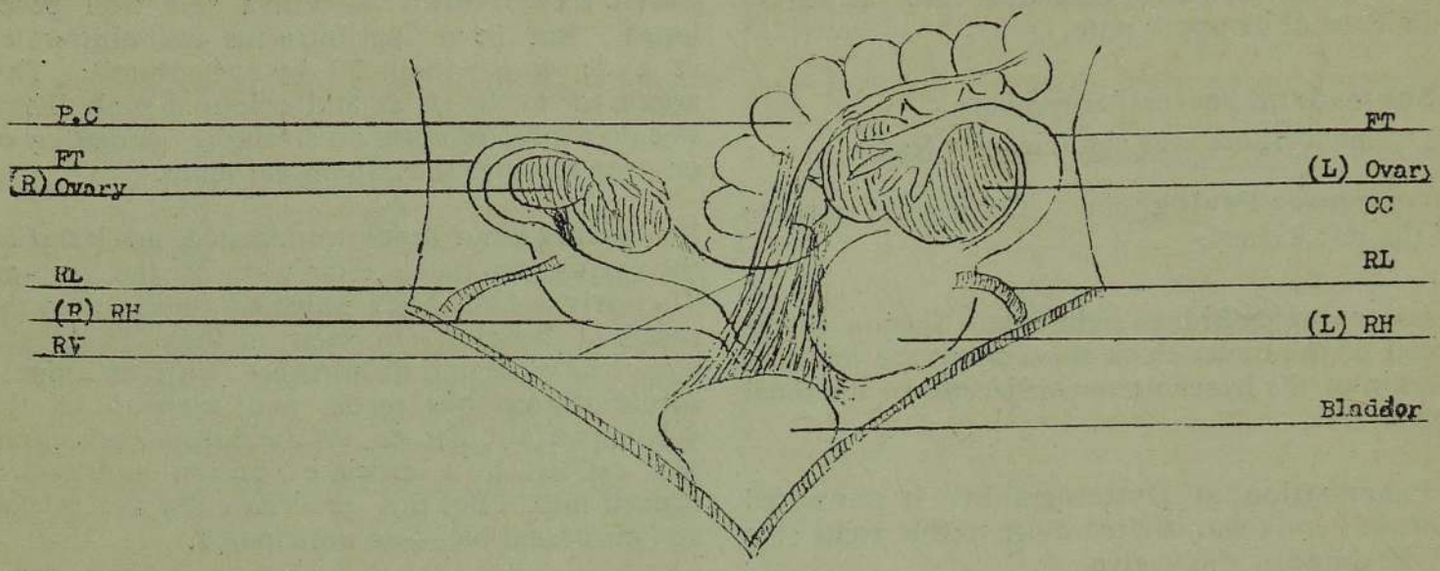
In view of the findings of

(1) Imperforate vagina.

(2) Absence of a cervix at the dome of the vagina

(3) Severe and periodic dysmenorrhoea associated with Cryptomenorrhoca

(4) Absence of the left renal shadow in intravenous pyelogram.



Legend - DIAGRAM NO. 2

As seen ot operation with the reeto vesical fold extending, from the pelvic colon to the posterior wall of the bladder, lying astride the two hemiuteri.

FT - Fallopian tube; RL - Round Ligament;
RH - Rudimentary Horn; RV - Recto vesical fold
PC - Pelvic Colon; CC - Choco late Cyst of ovary.

the mass felt in the left fornix was diagnosed as a haematometra developing in an ill developed - non canalized uterus and a laparotomy was decided on.

At Laparotomy

Exploration of the pelvis on the left side revealed the ballooned out body of the uterus forming into a rounded mass. The lower pole too was rounded off without any suggestion of the presence of a cervix. A fold of peritoneal tissue appeared to continue downwards from the lower pole towards the vagina. There was no communicating channel palpable in this fold. The round ligament and fallopian tube distended with altered blood were attached to the outerside of the upper pole, as shown in Diagram No. 2.

(Diagram No. 2)

The ovary too was distended to about the size of an orange with a large chocolate cyst. The entire mass was adherent to omentum and intestines.

On the right side of the pelvic cavity was found the right half of a Bicornuate uterus. It's body was thick and elongated with the round ligament and Fallopian Tube inserted on to its cornu.

The distal portion of the uterus was noted to taper down to terminate blindly well above the dome of the vagina.

There was no evidence of menstrual fluid in the cavity of the right horn. The right ovary appeared healthy.

In addition, a recto-vesical fold extending from the posterior surface of the bladder to the pelvic colon, lying in the midline astride the distal portions of the two uterine horns, was identified. On further exploration it was found that the left kidney and ureter were also absent. The right kidney was felt to be much larger than a normal kidney.

A left hemihysterectomy and oopherectomy was performed.

She made a smooth recovery.

Histological Examintion

Section show uterine tissue with endometrium.

DISCUSSION

Jacoby in 1935 recorded a case with Dysmenorrhoea where a pelvic mass was felt on the left side of the abdomen seperate from the normal uterus. He was able to drain

this haematometra, successfully, via the fornix, through a trochar. At laparatomy the uterus was found to be seperate up to the internal os, but the left horn was not canalized resulting in the development of a Haematomera. Yet no attempt was made to remove this horn as drainage was considered satisfactory. After dilatation this canal continued to function discharging the normal menstrual flow, without any dysmenorrhoea. However the case reported by Burton (1968) was less fortunate in that the haematometra though drained per vaginam, necessitated hemihysterectomy to relieve the symptoms caused due to sepsis setting in. Evidently, the risk of infection is inherent in these uteri probably due to the immature endometrium and poorly contractile ill developed myometrium. Morcover, it may, in addition, be due to the endometrium being atrophic caused by pressure, as was noted in the haematometra removed by Rolen. Futhere this procedure could hardly be advocated to drain haematometra in rudimentary horns, as these horns though aparently well developed, invariably have no vaginal communications or are only attached to the normal horn at the region of the internal os by a non-communicating fibrous hand (Bancroft – Baker – 1953). In most instances, these haematometra are associated with endometriosis and unilatral chocolate cysts of the ovary (Carpenter 1955 Rolen – 1966). These implants could be scattered in the pelvis leading to formation of adhesion to round ligaments, ovary and gut. According to Carpenter these cases seem to illustrate the Sampson's theory of pathogenesis of this disease.

The presenting clinical picture and some of the special anatomical features found in a haemtometra in a noncommunicating rudimentary horn are described in case numbers one and two. R. (case Number one) was menstruating regularly from the normal right horn of the double uterus, while the atretic left horn continued to enlarge progressivly with menetrunal blood resulting in a palpable tender tomour. With this clinical picture, one would find it extremely difficult to arrive at a correct diagnosis. On the contrary Miss. Y (Case number two) presented with;

(i) the symptoms of servere, disabling dysmenorrboca, associated with a tender cystic lump :

(ii) a non canalized vagina :

(iii) absence of a palpable cervix at the dome of the vagina ;

(iv) absence of the left kidney shadow in the intravenous pyelogam;

strongly suggested the possibility of a haemetometra in a non-canalized rudimentary horn. Further, the presence of a haemtosalpinx on the left side on both these patients was clear proof of the occurrence of retrograde menstruation, leading to the formation of extensive adhesions to omentum and gut. However, it was very unfortunate in this patient, that both uterine horns of the duplex uterus were atretic and ill developed; the anatomically better formed horn apparently contained non-reacting endometrium, while the non-canalized blind horn was the site of functionally normal endometrium. Thus the right horn remained quiescent while the left continued to enlarge with each menstrual blood. The other feature of interest was the presence of a recto-vesical fold of peritonium lying astride seperating, the two rudimentary horns.

A hemihysterectomy was performed in both patients. Miss. R continued to menstruate regularly from the remaining normal horn free from dysmenorrhoea. But the other patient, Miss. Y. though relieved of her symptoms, was not menstruating. If however, the endometrinm of the right horn showed some evidence of hormonal response it would have been worthwhile to have undertaken a re-canalization operation by anastamosing the distal narrow isthmic segment of the uterus to the dome of of the vagina.

CONCLUSIONS

1. The remarkable coincidence in the two cases described was the fact that the atretic horn was in the left with the absence of the ipsilateral kidney and ureter.

2. The presence in both of a haematosalpinx and chocolate cysts is evidence of retrograde menstruation, leading to pelvic endometriosis.

3. The trertment advised would be to perform a hemihysterectomy and resection of the chocolate cysts, whenever possible.

ACKNOWLEDGEMENTS

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An Absolute Indication for Caesarean Section (Achondroplasia)

by

J. Ashmore. F. Attapattu*

Achondroplasia, dominant autosomal disease is the most common syndrome causing dwarfism with shortened limbs. The term was coined by Parrot in 1878 (literally meaning) without cartilage formation) to distinguish the disease from rickets with proportionately short stature. Pregnancy in an achondroplasic patient is sometimes encountered. The case reported here is one that was seen at the Ilford Maternity Hospital, Ilford, Essex, United Kingdom in 1972.

Case Report

Mrs. P. K. 29 years, a gravida 3 from Ilford was booked for confinement at the Ilford Maternity Hospital on 6 th June 1972, The last regular menstrfical period was on 3 rd March 1972. The expected date of delivery was on 10 th December 1972. The period of gestation was 13 weeks and 4 days. There was nothing abnormal in her present pregnancy,

Menarche was at 13 years age. The periods were regular once in 4 days. There was no dysmenorrhoea.

Her previous two pregnancies had been terminated vaginally by suction at 10 weeks and 12 weeks in July 1970 and August 1971 respectively for social and medical reasons.

There was no history of rheumatic fever or chorea. No history of tuberculosis, hypertension, diabetes in the family. No history of dwarfism in the family. Since 8 years age she had has asthma. As a child she had a tonsillectomy and ahdenoidectomy done. She had rubella at 17 years age.

At booking the heamogolobin was 13.2g%. Blood group A Rh positive VDRL- negative. The urine had no protein or sugar. On 17th October 1972 White blood cell count was 9,800 per cc, Haemoglobin 13.2g%. pack cell volume 40.8%, Mean corpuscular volume 92 u3, Mean corpuscular haemoglobin 29,6uug, Mean corpuscular haemoglobin concentration 31.9 %. Radiological pelvimetry done in August 1970 showed a grossly abnormal pelvis, typical of achondroplasia. The antero - posterior diameter at brim was 2.2 inches. Maximum travsverse diameter at the brim was 4.9 inches.

At booking she weighed 8 stones 1 pound 8 ounces. The height was 4 seet 2¼ inches. The upper arm measured 7 inches; elbow to wrist 6 inches,; hand length 5½ inches; hand span 6 inches. Hip to knee 12 inches; knee to ankle 10 inches; The feet measured 8 inches. The girth of the abdomen at the umbilicus 8 days post-partum was 32 inches. The distance between Xiphisternum and and public symphysis was 14 inches. Distance between aterior superior iliac spines was 10 inches. Distance between pubic symphpsis and 5th lumbar vertebra was 8 inches. Distance between highest points of the iliac crests was 8 inches. The breasts were normal. The cardiovascular and respiratory systems were clinically normal. The size of the uterus corresponded to the period of amenorrhoea of 13 weeks.

She was seen regularly at the antenatal clinic. The pregnancy was progressing normally. The blood pressure remained at 120 / 80 millimetres of mercury. The fetus presented by the vertex at 36 weeks. The head was found floating at the brim. Examination per vaginam revealed a sacral promontory which was easily palpable. All other areas of the pelvis were grossly contracted. A decision was taken to terminate the pregnancy. at term by Caesarean section.

She was admitted for confinement on 26ht November 1972. She was in early labour. She was distressed by an attack of asthma at the time. The head was found presenting, but very high from the brim. The cervix was soft and long with no sign of effacement. Membranes were intact. An immediate lower segment Caesarean section was performed under general

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anaesthesia. Tortuosity of veins were noted. A live baby girl weighing 5 pounds 15 ounces was delivered. The Apgar score at birth was 9/10. There were no malformations. The length was 18½ inches; head circumference 13¼ inches. The baby was seen by the Consultant Paediatrician on 27th November 1972 There were no signs of achondroplasia.

The post-operative period was uneventful except for an ocassional attack of asthma. She was discharged from hospital well on the 10th post-operative day.

The patients own birth was checked up. She was born on 8th March 1943. The labour had been prolonged and she was delivered by forceps under general anesthesia.

Discussion

Most of the popular textbooks on obstetrics has been referred to, but no mention has been made of the pelvis in an achondroplasic women. Fairbank (1951) states "The pelvis is reduced in all diameters. The ilium especially in adults is small and the crest is thickened. In children the lower part of the ilium, above the acetabulum, is broader than normal and the bone as a whole is of a curious shape. The hip joint lies farther back than usual, so that the acetabulum abuts on the sacro-siactic notch. Sometimes the pubic arch is unusually wide. The sacrum is narrow and tilted to an abnormal degree, its promontory protruding more than usual into the pelvic cavity". The discrepancy between the short extremities and the comparatively long trunk and the pecularly shaped pelvis are not satisfactorily explained.

The antero-posterior diameter of the pelvic brim in the patient reported here is only 2.2 inches. The normal true conjugate measured by Smellie about 200 years ago was 4¼ inches (10.8 cms). However more recent work has shown the obstetric conjugate (which is about 0.5 centimetre less than the true conjugate) to be as high as 4¾ inches (.12.0 centimetres). Vaginal delivery with a true conjugate below 3½ inches is not feasible unless the fetus is extremely small; the survival of so small a baby is remote.

Abdominal delivery by Caesarean section was mandatory in our patient. Spalding (1942) reports two cases of achondroplasia delivered by Caesarean section. His two, patients were primigravidae 119 cms and 132 cms tall respectively. The true conjugates were 5.75 and 8 25 cms respectively. Both were delivered by Caesarean section. The baby of the former at the age of three years showed signs of achondroplasia. Our baby was normal.

Spalding (1942) comments on the paucity of literature on achondroplasia in pregnancy. Williams in his textbook quotes a case of a 27 year old achondroplasic 123 cm tall who had died after Caesarean section. Another case is reported by Balasquide (1935) in a puerto Rican woman. Even in more recent literature finding references of achondroplasia in pregnancy has been no easy task. This case is reported due ti its rarity.

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Acknowledgements

I must thank Mr. Leonard Easton, Consultant Obstetrician & Gynaecologist Ilford Maternity, King George and The London Hospital for his permission to publish this case. The staff of Ilford Maternity Hospital is thanked for their assistance.

CASE REPORT.

Amoebic Ulceration of the Cervix.

by

A. S. Thavarasah,*

V. Manoharan,*

Amoebic ulceration of the cervix is an uncommon condition in Sri Lanka. Jayaweera (1975) reported the first case of such a lesion in this country. We in this year report another case.

Case Report.

Mrs. P. P. a 41 year old sinhalese house wife was admitted to our unit from our Gynaecological clinic on 17. 7. 75 with a history of blood stained vaginal discharge of two months duration. Initialiy she had a profuse white discharge, and subsequently there was post coital bleeding prior to admission. She had no major ailments before this complaint. She was married for 18 years with four children, the last being four years old.

On examination she was undernourished and weighed 78 lbs. Her haemoglobin was 78% (10.7 gm%). The cardio vascular system, respiratory system, and the abdomen did not show any abnormalities.

The external genitalia looked normal, but there was a copious blood stained discharge from the introitus. Speculum examination revealed a fungating proliferative growth in the cervix, with areas of necrosis. The dome of the vagina was indurated, and so was the parametrium on both sides to a distance of about 2 cm. The pouch of Douglas was clear. Per rectal examination confirmed the parmetrial induration, but the mucosa of the rectum itself was normal and no growths were felt. A clinical diagnosis of carcinoma of the cervix, stage III was made, to be confirmed by biopsy. An examination under anaesthesia and biopsy of the cereix was carried out on 19. 7. 75. To our surprise the histology of the sections made from the tissue showed no evidence of a carcinoma but showed the trophozoite of Entamoeba histolytica in abundance among necrotic tissues (Fig. 1). Subsequent to this report, the discharge collected from the vagina was sent for examination and culture. This revealed large numbers of Entamoeba histolytica (vegetative form). The smear was negative for Trichomonas vaginalis, monelia and gonococcus. A retrospective history from the patient regards intestinal amoebias was taken. She denied any history of passage of blood and mucus in the stool. However one of her children had a recent episode of diarrhoea with blood and mucus.

Other laboratory investigations carried out included a W. B. C. of 9,000/cmm. with 27% neutrophills, 62% lymphocytes and 11% eosinophills, eyrthriocyte sedimentation rate of 43 m. m. (1st hour). Stools for A. O. C. on two occasions revealed the presence of round worm ova only. The blood urea was 23 mg% and the urine showed an occasional pus cell.

She was treated with Emetine 45 mg. I. M. daily for 7 days and metranidazole 2 tablets three times a day for 10 days. She stayed in the unit for 30 days during which time she was also treated for her anaemia and the worm infestation. The ulceration of the cervix disarpeared completely at the time of discharge.

Discussion

Entamoeba histolytica normally inhabit the bowel and intestinal amoebiasis is a common problem in tropical countries. Hepatic lesions occur in a significant proportion of patients due to portal invasion of the amoebae. Amoebic lesion in other sites are rare and genital amoebiasis is uncommon. So far a total of

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Amoebic Ulceration of Cervix.

Fig 1: -

Photo - Micrograph of Cervical tissue Showing abundance of Amoebae

35 cases have been reported (Munguia et all, 1966) One of these is a case of amoebiasis of the endometrium diagnosed at postmortem in a patient who died immediately after partus.

Among the genital organs, the cervix and the vagina seems to be the common sites of invasion. In almost all the patients so far reported, The initial diagnosis has been carcinoma of the cervix. The infestation being diagnosed only after biopsy of the cervical tissue, or at cervical smear carried out to confirm the malignancy and not perticularly to diagnose amoebic lesions. Munguia et all (1976) in Mexico detected 24 cases of genital amoebiasis among 100,000 women screened in 5 years by the papanicolaou technique.

In Sri Lanka, even though intestinal and hepatic amoebiasis are common, genital lesions have so far not been reported except for the solitary case reported by Jayaweera (1975). The diagnosis was made at cervical biopsy done routinely to confirm malignancy. His case was detected after over 4000 biopsies done for caricinoma of the cervix at the Cancer Institute, Maharagama over a period of 14 years. Our case itself is the only case diagnosed among 1000 biopsies done over a period of 10 years in our unit.

It should however be emphasised that ulceration of the cervix appears only in servere cases of genital amoebiasis and early lesions may present with leucorrhoea. Bhaduri (1957) in India reported that 11.3 percent of women with vaginal discharge had E. histolytica infestations. There fore it is possibable that many cases may go undiagnosed if this probability is not kept in mind. A co-existing amoeoic infection in a case of carcinoma of the cervix should be adequatcly treated, before irradiation as primary irradiation may result in a fatal outcome (Carter et all, 1954)

The source of infection is probably by contamination from the large bowel considering the fact that in the majority of cases a eo-existing intestinal amoebiosis been reported. In our patient repeated examination of the stools did not reveal the presence of the trophozoite However sigmoidoscopy. which would have been of help was not done in this patient. The other possibility is spread by sexual transmission, where amoebic balanitis or amoebic vaginitis in one partner may be the source.

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Obituary

Dr. C. KATHIRGAMANTHAN, FRCS. (Eng.) FRCOG.

Dr. C. Kathirgamanathan visiting Obstetrician an Gynaecologist De Soysa Hospital for Women, Colombo passed away suddenly after a severe heart attack on the 25th of January 1978. He was 51 years old at that time and his death was a severe blow to his family, relations, friends and patients. He had a long list of Gynaecological operations that morning and returned home late for lunch. Soon after lunch while resting in his bed he complained of severe pain in chest and his heart went into ventricular fibrillation.

He had a brilliant carrier at the Faculty of Medicine in Colombo winning several medals and distinctions. He specialised in Obstetrics and Gynascology quite early in life obtaining Fellowship of the Royal College of Surgeons of England and the membership of the Royal College of Obstetrics & Gynaecology in a very short time. When he returned to the island after specialising and served in several outstations and was later appointed to the Colombo Teaching Hospital. He was a good surgeon and a better Obstetrician.

His patients, Students and friends will remember him for his kindliness, his old world courtesy and deep humanity. Although a busy medical man, he was a totally committed religious man and his religious convictions guided his thoughts and action. A regular visitor to the Ramakrishna Mission where he took part and even presided in discourses on the Bagavath Gita. He was also a follower of Yogi SaiBaba and recently before he died spent a month in his Ashram in Bangalore. He was getting involved too much in religious life that it was impossible for him to continue to live in this world any more.

S. R.

Dr. P. H. AMARASINGHE. M. B. B. S., F. R. C. O. G.

Squadron leader P. H. Amarasinghe died of a traffic accident on 6th Jan 1979. He was aged 56.

Known as "PH" to his large circle of friends, he was a deeply committed obstetrician, critical in his approach to medical methodology, intensely humane towards his patients, and varied in his general interests.

Dr. Amarasinghe was foremost amongst those who considered health care systems a major method of reducing the maternal mortality and morbidity, and always strove to provide "something for all, and more for those in greater need". Dr. Amarasinghe was a founder member of the Sri Lanka College of Obstetricians & Gynaecologists and served as a Committee member throughout. He also edited the College Journal. Senior officials of the College will remember his regular and prompt attendance at meetings and the lively and valueable contributions to the matters under discussion he could be relied upon to make.

An enduring memory is of "PH" squeezing out the after-births to find out for himself the possible extent of a 'placental-transfusion' to the baby before the cord was cut, and of performing blood volume estimations on himself, before carrying out such tests on his patients.

To know 'PH' was to get a wide-angled view of life. His interests ranged from testing basic medical concepts, observing life in the jungles and under water as a naturalist, to photography and flying. And he excelled in these several spheres, for his one interest fed another. He qualified MRCOG, obtained his gliding licence and his deep skin-diving certificates in the UK within weeks of each other Above all, he was interested in people, and loved travel and mixing up with people. He moved with equal facility amongst groups of varying ages, pleasing and being pleased by them all. His death dims the profession and the speciality he chose. Our sympathy goes out to his wife and to his children.

P. D.

Report of the Sri-Lanka College of Obstetricians ond Gynaecologists 1976 - 1978

At the fifth Annual General Meeting of the Sri-Lanka College of Obstetricians and Gynaecologists held on 29th October 1976 at 5.00 pm at the De Soysa Hospital for Women, Colombo (Lecture Theatre) with the President Dr. P. Dissanayake in the Chair the Office Bearers for the period 1976 to 1978 were elected. This was followed by the Presidential Address by the newly elected President, Dr. J. B. Wedande, FRCS., FRCOG at the Anatomy Lecture Theatre on "OBSTETRICS WITHOUT TEARS". A Cocktail party was later held at the residence of the newly elected President.

ANNUAL GENERAL MEETING

OFFICE BEARERS

Patron:	Professor D. A. Ranasinghe
President:	Dr. J. B. Wedande
Vice-President:	Professor D. E Gunetileke
Secretary:	Dr. J. A. F. Attapattu
Treasurer:	Dr. J. N. Rodrigo
Council:	Dr. A. S. Thavarasah
	Dr. W. S. C. Fernando
	Dr. J. B. Gnanapragasam
	Dr. A. H. Gunaratne
	Dr. P. H. D. H. De Silva
Editor:	Dr. P. H. D. H. De Silva
Editorial Committee:	Dr. J. B. Gnanapragasam
	Dr. A. S. Thavarasah
	Dr. P. H. Amarasinghe
Ex-Officio:	Dr. J. B. Wedande (President)
	Dr. J. A. F. Attapattu (Secretary)
	Prof: D. E. Gunetileke (Vice-President)
	Dr. J. N. Rodrigo (Treasurer)
Auditors:	Dr. S. P. Kularatne
	Prof: Kingsley De Silva

COUNCIL MEETING

The Council met on seven occassions.

24.3.76: The main item discussed was a lecture to be given by Mr. Elliot Phillip, FRCS, FRCOG, the first representative of the Royal College of Obstetricians and Gynaecologists to the Institute of Post-Graduate Medicine of Sri-Lanka. The lecture was fixed for 19. 12. 76 on "Recent advances in tha management of Infertility". This was followed by a dinner at the Galle Face Hotel. Colombo in honour of the guest. A number of members and University Staff participated. The members paid for their own dinners. The liquor was provided by a drug firm.
A decision was taken to have a new crest for the College. It was also decided to compile a Register of Members. and Visitors and to have a new banner made.

17.12.76 The final arrangements for Mr. Elliot Phillip's visit were discussed. A design of a crest by Mr. Manjusri a well known artist was presented by the President, Dr. Wedande. This was accepted. As Dr. P. H. D. H. De Silva had resigned and left the Island, matters relating to the publication of the Journal were handed over to the Editorial Committee. The next Scientific meeting was fixed for 21. 12. 76. Dr. C. E. Ford, FRS, PhD, Professor of Genetics, University of Oxford spoke on "Cytogenetics and Fetal Wastage".

6.5.77 The final prototype of the College crest was presented to the Council by Dr. Wedande. Dr. Gnanapragasam agreed to expedite the publication of the Journal provided contributors of articles helped him in getting advertisements. The next Scientific meeting was fixed for 17.6.77. This was to be a symposium on "Sterilization" to be held in two parts.

15.8.78 The problems regarding the publication of the Journal was again discussed. The next Scientific Meeting was to be a lecture on 1. 9. 78 by Dr. George. Maxwell, FACS, FACOG of the Johns. Hopkins Hospital on "Advances in Obstetrics and Gynaecology. The next

item discussed was membership with the FIGO. It was decided to continue the membership. The difficulties in getting members to participate in the activities of the College was then discussed.

The Council decided to meet the expenses of the members who participated. The next item discussed was the Part I MRCOG examination to be held in March 1979. As the College was not informed in time of such an examination and as it was being solely conducted by the Royal College of Obstetricians and Gynaecologists with the assistance of the Reference Committe (RCOG), Sri-Lanka the Council resolved that the College would not be in a position to conduct a course for the said examination.

30.1.79 New members were elected. Dr. H. Seniviratne was co-opted as Editor. The date for the Annual General meeting was discussed. As the majority of the Council members happened to be abroad it was decided to held the meeting after April 1979. A letter from the Chairman Reference Committee (RCOG) to the President informing him of the date of the Part I MRCOG examination and a proposed visit to the island by Prof. J. S. Scott was tabled.

18.4.79 The Annual General meeting was fixed for 7th July 1979 at the De Soysa Hospital for Women Lecture Theatre. As the present constitution needed amendments the Council decided to meet again, so that the amendments could be put before the House at the Annual General Meeting.

10.6.79 Amendments to the Constitution and matters dealing with the Institute of Post-Graduate Medicine were discussed.

Scientific Meetings

Lecture: Mr. Elliot Phillip, FRCS., FRCOG, Consultant Obstetrician & Gynaecologist, City of London Maternity and Royal Northern Hospitals, U. K on "Recent Advances in the mangement of Infertility" on 19. 12. 76

Lecture: Dr. C. E. Ford. FRS., PhD, Professof Genetics, University of Oxford, U K on "Cytogentetics and fetal wasteage" on 21. 12. 76.

Symposium: On "Stesilization"

Part I onl 7. 6. 77: Dr A. G. S. Dassenaike, FRCS, FRCOG- Mini - laparotomy Dr. J Gnanapragasam, MB. FRCOG- Vaginal sterilization Prof. D. E. Gunetileke, FRCS. FRCOG - Laparoscopic sterilization,
Dr. S. P. Kularatne, MB., MRCOG.- Sterilization under Local anaesthesia.

Part II on 15. 7. 77 Dr. M. Sriranganathan, MB, MRCOG- Reversal Dr. P. Dissanayake, MB, FRCOG- Post LRT syndromes. Discussion.

Lecture: Dr. George. A. Maxwell, FACS, FACOG, John Hypkins Hospital, U. S. A. on "Advances in obstetrics and gynaecology" on 1. 9. 78

College Dinner

Was held at the Galle Face Hotel, Colombo on 19. 12. 76 The chief guest was Mr. Eliot Phillip, FRCS FRCOG members of the College and University staff participated.

Fellowship of the Royal College of Obsttetricians & Gynaecologists

The following members of the College were elevated to Fellowship of the RCOG,

1. Dr. W. S. C. Fernando
2. Dr. P. S Perera
3. Dr. J. B. Gnanapragasam
4. Dr. V. Kadirigamathamby

Murugesar Sinnethamby Oration

1976: Dr. M. Gunaratne, MB, MS, MRCOG, Senior Lecturer in Obstetrics & Gynaecology, University of Sri-Lanka, Peradeniya on "Significance of the differen tial utrine measurements in vivo.

1979: Prof S. Ratnam, FRCS, FRCOG, FACS Professor of Obstetrics & Gynaecology University of Singapore on "Laparoscope in the management of Subfertility.

Retirements

The College wishes Drs A. Perera, A Goonesinghe and Dr (Miss) Panchalingham a pleasant retired life.

APPOINTMENTS

1. Chancellor University of Colombo

The College records with pleasure the appoinment of Prof D. A· Ranasinghe, a Former President and Patron of the College to the above post.

2. Teaching Hospitals

Dr. J. N. Rodrigo, the Treasurer, of the College Dr. J. B. Gnanapragasam, member of the Council have been appointed to Castle St Hospital for Women Drs. E. L. Joseph and V. Kadirigamathamby to De Soysa Hospital for Women.

3. Chair in Obstetries & Gynaecology

a. Dr. D. E. Gunetileke, Vice-President was appointed Professor & Head of the Dept of Obst & Gyn, University of Colombo.

b. Dr. P. Dissanayake, a former President was appointed as Prof & Head of Dept of Obst & Gyn, Ruhunu Campus Matara,

c. Dr. M. Sivasuriya, a former Editor was appointed Prof & Head of Dept of Obst & Gyn, University of Jaffna.

Out of the Island

Drs P. H. D. H. De Silva, a former Editor, F. B. Abeysekara, a former member of the Councial and R. Gulasekeram have left the island.

New Members

The following were elected members of the College: Drs. L· Abeysirigunawardene S. P. Weerasinghe, K. Somasekerampillai, N. Pasupathy, K. C. E. Perera, W. T. Nugaduwa, H. Seneviratne and S. A. B. Perera.

Deaths

The College notes with regret the untimely deaths of Dr. P. H. Amerasinghe, a Founder member, a former Editor and former member of the Councial and Dr. C. Kadiragamanathan, a Founder member of the College.

Acknowledgement

The College thanks the Medical Superintendent, De Soysa Hospital for Women for granting us permission to use the Lecture Theatre for our meetings. The College also extends its thanks to Obstetrical and Cynaecological Society of Singapore for their copies of the Proceedings of the Society.

I take this opportunity of thanking the President, other members of the Councial and all those members who have participated in the activities of the College.

I am sorry to state that during our term of office the activities of the College were to some extent hampered due to several drawbacks that came our way Combined Trade Union action by the GMOA and AMS which dragged on for quste sometime was one of the chief contributing factors. The General Elections, Non-Aligned Conference, Annual transfers, resignations and leave abroad of members were some of the other impediments, which contributed to the dormancy during the latter part of four term of office. Added to all this the difficulty in getting members to participate in the activities of the College has been no different.

It is regretted that the College Journal which is long overdue has yet to be published due to the above-mentioned reasions.

I must thank Dr. Wedande for all his assistance and encouragement given during my term of office. I also extend my thanks to Prof Ranasinghe who has always attended the Council meetings and given us his valueble advice. Last but not least the College wishes Prof. D. E. Gunetileke, the President Elect every success during his term of office.

J. Ashmore. F. Attapattu,
Hony Secretary, SLCOG.

The use of Laparoseopy in the Diagnosis of Eetopic Pregnancy.

Santhan Perera,*

Introduction

Ectopic pregnancy is potentially the gynaecoligist's most critical problem. This is essentially a diagnostic one (14). In some cases the diagnosis is easy and is obvious even to the most junior medical officer, but in others the diagnosis may be impossible even to the most experienced gynaecologist.

Aim of the Study

To show that laparascopy is an excellent means of diagnosing ectopic pregnancy early and accurately, and when combined with a good history and examination, an accurate diagnosis could be made in all cases.

Material

The material for this study consisted of 17 consecutive cases of ectopic pregnancies admitted to our ward at the Lady de Soysa's Hospital for Women, Colombo during a period of two years.

Method

Diagnostic laparascopies were done on all cases where ectopic pregnancies were suspected, even in the absence of signs and symptoms, or with minimal signs and symptoms.

Results

As shown in the table.

Discussion.

Ectopic pregnancies account for 9 percent of the maternal deaths. (20) In various surveys conducted the rate of diagnosis varies between 56% and 88% (10); (11). The difficulties in diagnosis has been confirmed by Various Others (2); (7); (8); (14).

The possibility of an ectopic pregnancy should always be bourne in mind whenever a woman of childbearing age presents with abdominal pain. Medical officers who keep the possibility of extra-uterine pregnancy in mind will rarely fail to diagnose it when it exists. On the other hand, one who is not alert to the possibility will meet with many surprises which greater care could have avoided (12).

The picture presented by an ectopic pregnancy is extremely variable and any intra-abdominal condition can be simultated. The differential diagnosis consists of —

1. Abortion.
2. Abortion complicated by salpingitis.
3. Early intr-uterine pregnancy complicated by pelvic tumour such as fibroid and ovarian cyst.
4. Second horn of a pregnant bicornuate uterus, the picture is more confused if the prengnacy is threatened.
5. Retroverted gravid uterus and a pelvic hematocoele.
6. Acute, sub-acute or chronic tuberculous salpingitis.
7. Dysmenorrhoea.
8. Torsion of an ovarian cyst, intra-peritoneal haemorrhage from any cause such as ruptured spleen, tumour, graffian follicle or corpus luteum.
9. Acute appendicitis,
10. Perforated peptic ulcer.
11. Renal colic.
12. Reaction to an intra-uterine contraceptive device,

Ectopic pregnancy can present as 'acute', 'sub - acute' and 'chronic' cases. The diagnosis of acute cases are easy. The diagnosis of 'silent' cases are made at laparotomies, vaginal examination at booking clinics and at autopsy. It is the sub-acute cases that poses the greatest problem in diagnosis.

Ectopic pregnancy should always be suspected on the history. To wait for signs and symptoms to develop in an ectopic pregnancy may prove disastrous. Laboratory and other anciliary aids are of little help in diagnosing an ectopic (14).

*Shanthan Perera - M·B.B.S. M.R.C.O.G. Consultant Obstirication & Gynaecologist Base Hospital, Awisawella.

"If in doubt cut it out" policy is also of little help in a crowded ward, where it may be difficult to keep the patient 7 to 10 days after laparotomy. An alternative to laparotomy is to admit the patient to the hospital and keep under observation for 24 hours. But to wait for signs to develop in an ectopic pregnancy even for 24 hours is dangerous.

Examination under anaesthesia may be dangerous because the ectopic pregnancy may rupture while examination, and anaesthesia also ablates the most useful physical sign i. e. localized tenderness (14); (8); (4).

Needling the Pouch of Douglas may not be helpful if the tubal pregnancy has not ruptured.

Pregnancy test if negative does not exclude an ectopic pregnancy, and if positive does not indicate whether the pregnancy is intra-uterine or extra-uterine.

Culdoscopy may be helpful, but to put the patient into knee chest position in the presence of intraperitoneal haemorrhage is dangerous.

It is under these circumstances that laparascopy is of help. The advantages which laparascopy offers in the differential diagnosis of ectopic pregnancy is so marked that this alone according to Fangenhein, Hopt, Jamin, Immenntoff, Miutz, Palmer, Thoyer-Rozat, Ian Donald and others is sufficient to fully justify laparascopy in gynaecology (7); (4). P. C. Steptoe (17); (18) stated it is an essential techinque to be used when ordinary clinical methods fails.

If on laparascopy ectopic pregnancy and othe pelvicr pathology are excluded the patient could be discharged from the hospital safely.

Ian Donald stated that armed with facilities of laparascopy it is now inexcusable to miss the diagnosis of ectopic pregnancy.

Dilatation and curattage may be of some help in that the macroscopic identification of products of conception may help to exclude an ectopic prggnancy. On microscopy the presence of decidual tissue without chorionic villi raises the possibility of an ectopic pregnancy Arias Stella reaction may be found in 25 percent of the cases but this is not specific for ectopic pregnancy. The variable pattern of the endometrium that could be found in the curetings was shown by Schiffer (15).

Ultrasonography may help in countries where facilities for this are available (3); (1).

It allows detailed and accurate examination of the female pelvic organs By using this method a rapid affirmation or denial of the diagnosis can be made, and decision to operate without further delay can be taken with confidence, at the same time unnecessary invasion of tha abdomen will be safely avoided.

Before the era of laparascopy not more then 6–8 percent of ectopic pregnancies were diagnosed in their intact condition. With the use of laparascopy 22-25 percent of ectopic preguancies were diagnosed before tubal rupture and hence potential fatal haemorrhage and unnecessary blood transfusions are avoided (7).

Robers and Neuworth (13) in a series found that the diognostic accuracy of laparascopy was 98.5 percent and negative laparascopy was 100 percent accurate.

In 1936 Hope used laparascopy in the U.S.A. to diagnose ectopic pregnancy. In reviewing 56, 106 cases of laparascopies (Loffer and Peut) (9) found that the second most frequent use of diagnostic laparascopies is as a diagnostic tool for ectopic pregnancy, the first being for abdominal pain.

Of the 17 cases in our series 15 cases were diagnosed before laparatomy. Thus a pre-laparotomy diagnosis rate was 88.3 percent. The two cases of ectopic pregnancies that were not diagnosed were 'silent ectopics'. One was diagnosed at laparatomy for myomectomy (Case No. 11. Patient P. C); in the other a wrong diagnosis of a twisted ovarian cyst was made and an ectopic pregnancy was found at laparatomy (case No. 17. Patient M. U. G.)

In our study there were 10 cases who presented as 'acute' cases. Their diagnosis was easy and did not pose any problems. In these cases diagnostic laparascopy was not done.

In the present study there were 5 cases which belonged to the 'sub-acute' group. These posed the greatest problems in diagnosis. The picture presented was extremely variable. In these the suspicion of ectopic pregnancy was raised, but we were unable to make a definite diagnosis with confidence. Under these circumstances we considered that laparascopy was the

No.	Name	Age	Para	Amenorr-hoea	Pain	Bleeding	Free Fluid	Tender ness of fornix	Palpable mass in fornix	Collap-sed	D & C	Lap.	Ruptured or not ruptured	Diagnosis.
1	W	21	2	+	+	+	—	+	I	+	—	—	Ruptured	'Acute'
2	SU	28	5	+	+	+	—	+	+	+	—	—	Ruptuted	'Acute'
3	PGBN	30	3	—	(+) —	—	—	(+) —	—	—	+	+	Intact	'Subacute'
4	SS	41	2	+	+	+	—	+	—	—	—	+	Intact	Subadute'
5	GDP	20	2	+	+	+	+	+	+	+	—	—	Ruptured	'Acute'
6	U	28	7	+	+	+	+	+	—	+	—	—	Ruptured	'Acute'
7	P	27	7	+	+	+	+	+	—	+	—	—	Ruptured	''Acute'
8	VN	32	7	—	+	(+) —	+	+	+	+	—	—	Ruptured	'Acute'
9	PAMP	30	4	—	+	+	+	+	+ —	+	—	—	Ruptured	'Acute'
10	LCW	32	2	—	+	—	—	+	—	—	+	+	Intact	'Subacute'
11	PC	32	1	+	++	+	—	+	—	—	—	—	Intact	'Silent' + Myoma
12	BP	27	2	+	+	—	+	+	—	+	—	—	Rupturid	'Acute'
13	MBP	29	3	+	+	—	—	(+) —	—	—	—	+	Ruptured	'Subacute'
14	SDD	32	4	—	+	—	—	+	(+) —	—	—	+	Intact	Subabtue'
15	KDS	30	2	+	+	+	+	+	—	+	—	—	Ruptured	'Acute'
16	MKP	20	5	+	+	+	—	+	—	+	—	—	Ruptured	'Acute'
17	MUAG	28	3	—	+	+	—	+	+	—	—	—	Intact	'Silent'
		Total	10	10	17	12	7	17	6	10	2	5	Intact 6 Ruptured 11	
18	S	34	3	+	+	—	—	+	+	—	—	+		Normal
19	V	20	0	—	+	+	—	+	—	—	—	+	Allergic Intestinal	Haemorrhagee
20	UF	27	2	—	+	—	—	+	+	—	—	+	Pyosalpinx	

best method available to clarify the situation, with reasonable certainity. These were diagnosed by laprascopy. Four of them were intact tubal pregnancies. The diagnosis of these at this stage could not have been possible if not for laparascopy.

In our series diagnostic laparascopies were done in three cases for suspected ectopic pregnancies, and at laparascopy proved to be not ectopic pregncncies. Of these one was found to be a large pyo-salpinx (case No. 20. Patient U. F); the next one was (case No; 19. Patient V). who showed internal haemorrhage which was due to allergy to asprin; in the other (case No. 18, Patient S.) no abnormality was found. In these unnecessary laparotomies were avoided.

RESULTS

Our series clearly shows, that laparascopy is an excellent operative aid in the diagnosis of ectopic dregnancy early and accurately.

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Meigs Syndrome - a Case Report

D. T. Jayaweera*

Introduction

Spegelberg in 1866 first reported a patient who died without operation, who complained of a swelling of the abdomen, and who had a fluid thrill and at a autopsy showed a left pleural effusion and a fibroma in the ovary.

In 1882 Spencer Wells stated a similar case. These were followed by Gaillard Thomas in 1877, Cullingworth in 1879, Demons of Bourdeaux, France in 1887 (Meigs 1954).

In 1892 in the Medico-Chirurgical Transaction Lawsan Tait of England reported a true single case of this syndrome. It was Demons again who really described this syndrome in 1900 and he advised against waiting to attack the ascites and pleural effusion by tapping but to proceed at once to the removal of ovarian tumour if possible. This syndrome was named by Rhodes & Terrel when they reported their case in 1937. Meigs in 1954 stated "..... Demons should by priority have his name precede that of Meigs in the name of this syndrome. I am sure that his name would greatly honour mine and I would be very happy to have the change".

This is a report of a case managed in the Obstetric and Gynaecological unit of the University of Ceylon Colombo, and it is our aim to illustrate certain difficulties in diagnosis and management.

CASE REPORT

Miss G. J. K., 28 years old unmarried female admitted to the University Gynaecological unit on 19. 09. 77 with a history of progressive enlargement of the abdomen of 20 days duration, swelling of legs and dyspnoea at rest She also complained of loss of weight of 3 years duration. She had been treated for Filariasis ten years ago.

There was no history of heart disease, Koch's disease or liver disease. She attained menarche at 14 years and had regular menstrual cycles of 28 days with the flow lasting 5 days. On examination she was of an average build with no evidence of anaemia, She had oedema of both ankles. Her cardiovascular and nervous systems were clinically normal the pulse rate being 80/min. and blood pressure 120/80 mm. Hg. Examination of the respiratory system revealed bilateral pleural effusions. In the abdomen there was evidence of ascites and her liver and spleen were not palpable. Abdominal girth was 32" at the umbillicus Rectal examination revealedt hat the uterus was normal and there was a right sided ovarian cyst of 2"x2" in size. On 28. 04. 77 paracentesis abdominis and diagnostic laparascopy were done. 8400 ml. of straw coloured fluid was aspirated. On laparascopy a right ovarian cyst was visualised and a laparotomy was performed. Right ovarian cystectomy was done and a cystic lump of about 2"x2" was removed. The cyst was smooth and there were no haemorrhagic, necrotic or solid areas. The remaining part of the right ovary was normal, and therefore it was reconstructed. Left ovary too was normal.

SPECIAL INVESTIGATIONS

Histology

Ovarian cyst 5x3 cm. bilocular with some thickening of the wall. Sections were those of a follicular cyst with a para follicular haematoma. There was no evidence of a neoplasm.

Tentatively the condition was regarded as pseudomeigs syndrome (Meig's 1954), but since there was no response to ovarian cystectomy with ascites and pleural effusion continuing further investigations were carried out to determine any other possible aetiology.

E. S. R.

Persistantly in the range of 10 mm to 50 mms/1st hour.

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W. B. C. / D. C.

8400 — N — 72%
L — 24%
E — 04%

Urine Examination — was normal.

Chest X' ray - Showed bilateral pleural effusion with clear apices and normal heart shadow. This was repeated fortnightly and the findings remained unchanged.

E. C. G. Showed no evidence of constrictive pericarditis.

Analysis of the pleural fluid - Straw coloured and it had the features of a transudate. There were no malignant cells or acid fast bacilli.

Analysis of Ascitic fluid - was same as the pleural fluid.

Mantoux test - was negative.

Liver function test and liver biopsy — There was no evidence of hepatic cirrhosis.

In view of the fact that the patient gave a history of filariasis 10 years back

Filarial Fluorescent Antibody Titre
Peripheral blood film
Lymphangiogram of the lower limbs and thoracic duct were done

But all these tests were negative.

Blood films for **L. E. cells** and **malarial parasites** were negative.

Sputum examination - No evidence of acid fast bacilli in Ziehl- Neelsen stain or culture.

Therapeutic trials

Following were given but there was no response.

1. For T. B - Rifampicin 450 mgms. daily for 6 weeks.
2. For polyserositis - Prednisolone 40 mg. daily for 2 weeks.
3. For filaria - Hetrazan 6 tablets daily for 14 days.

Subsequently the patient developed a swelling of the right upper leg and right side of the neck and the face. A tentative diagnosis of S. V. C. obstruction was made. S. V. C. venogram showed obstruction of internal jugular vein and the subclavian probably due to embolism following repeated I. V. infusions to that arm and there was no evidence of constrictive pericarditis. This was followed by scalene node biopsy to exclude a mediastinal tumour and the histology was of non specific lymphadenitis.

The serum thyroxine was done to exclude myxoedema but this was 4.5 mmg/100 cc. (normal 6 - 9 mmg/100 ml.).

Inspite of all efforts to arrive at a specific diagnosis the ascites persisted for the next 9 months. Abdominal paracentesis was necessary to relieve her symptoms, frequently on each occasion 8 litres of fluid was drained. The pleural effusion remained static and posed no serious problems.

Finally it was decided to repeat the laparoscopic examination and the presence of two masses in the right ovary was revealed. It was followed by a laparotomy and a right sided ovariotomy was performed.

Histology

Macroscopially soft whitish masses 8x15 c. m. 4x2.5 c. m. Microscopically one was a fibroma while the other was a ovarian tumour of thecoma fibroma group.

Following this second laparotomy the patient made an uneventful recovery with complete reversal of symptoms in 4 days.

When the patient was seen again in 6 weeks she had gained weight and looked quite healthy without ascities or hydrothorax.

DIAGNOSIS

Meigs in 1954 in a study of abdominal tumours with ascites and pleural effusion laid down certain diagnostic criteria to avoid confusion. Those are —

1. Ovarian tumour should be benign, solid and hard, with the appearance of a fibroma. Thecoma is a fibrous tumour which cannot be differentiated from a fibroma without special stains. We now know that Thecomas and Granulosa cell tumours are most often mixed tumours hence those two are included in this syndrome.
2. Tumour should be accompanied by ascites.
3. Fluid should be present in the chest, this is most often in the right but it may be in the left or bilateral. It may be demonstrated clinically, radiologically or by fluoroscopy.

4. Removal of the tumour must relieve the patient of her ascites and hydrothorax.

The symptoms in Meigs syndrome are typical. Not all the signs are present in each case but some of them are and a knowledge of the syndrome should at least suggest the diagnosis (Meig's).

Abdominal swelling and pain, dyspnoea (nearly always present), chest pain, loss of weight, oedema of the legs, and the signs of fluid in the chest, on physical examination should at once suggest the possibility of this lesion. X'ray of the chest will show the presence of fluid. The fluid is found on the right side of the chest in the majority of cases, and this is said to be due to a greater number of lymphatic channels, being found in the diaphragm on the right side. Many of the patients with Meig's syndrome are reported as being under nourished, very ill, emaciated and cachectic. However some patients are especially well. Other symptoms and signs useful are, shift of the mediastinum to the opposite side from the fluid in the chest and congestion and fullness of veins of the neck. Prolapse of the uterus is not uncommon due to the increased intra abdominal pressure, and incontinence and frequency of urination has been reported. Abnormal bleeding of all types has been reported due to the illness of the patient and the interferance with ovarian function in the young. In considering laboratory findings there are no distinctive features except on the negative side. The fluid in the chest and the abdomen are very similar in a typical case of Meig's syndrome. This is nearly always clear, yellow, citrus, or amber and rarely it may be truely blood stained. The fluid is a transudate.

Discussion

28 years old unmarried female presenting with distension of the abdomen, dyspnoea, bilateral ankle oedema and loss of weight. On examination she was found to be having ascites, bilateral hydrothorax and a small mass felt in the pelvis. On visualising a right sided ovarian cyst at laparascopy a tentative diagnosis Meig's syndrome was made. But at laparotomy after a careful inspection it was found that both ovaries were normal except for a benign cyst that was found in the right ovary. The cyst was removed and its histology reveald a simple follicular cyst. Since a fibroma or fibroma like solid ovarian tumour was not found and also since ascities recurrved within 1 week, the original diagnosis of Meig's syndrome was rejected.

It must be realised that almost any sort of tumour can produce ascities and hydrothorax (Meig's 1954). In a series done by Meig's himself he found that out of 122 cases 82 were typical cases of Meig's. 69 reported as fibromas, 8 thecomas, 5 granulosa cell tumours. There was 15 cases of benign ovarian cysts 5 with leiomyoma of the uterus 2 teratomas of the stroma type and one patilloma of the fallopian tube which could be classified as pseudomeig's spndrome,

It addition ascites and hydrothorax can be caused by (a) malignancy in abdominal or pelvic organs, (b) cysts and traumatic injuries to and carcinoma of pancreas. At laparatomy all the organs were normal except for a benign cyst in the right ovary. There was no response upon removing the cyst. Hence all above mentioned causes were rejected as actiological factors. Other causes of ascites with pleural effusion were considered at this juncture. There was no evidence of malignancy in the ascitic fluid or at laparotomy. Tuberculous actiology was considered but the E.S.R., Mantoux and analysis of ascitic and pleural aspirate were persistantly negative, but nevertheless a therapeutic trial was given. Liver function test and aspiration liver biopsy showed that patient was not having hepatic cirrhosis, lymphatic obstruction was excluded by lymphangiogram. Constrictive pericarditis was excluded clinically and by doing S. V. C. venogram and E. C. G. Polyserositis was considered next, although there ware not enough evidence, therapeutic trial was given. Finally as a last resort it was decided to do a 'second look', laparotomy which revealed a fibroma of the ovary which when removed brought about complete recovery clinching the diagnosis of a Meig's syndrome.

In analysing this case there were many points to ponder:

1. The remarkable fact was that when the patient had gross ascites initially there was no evidence of a solid ovarian tumour or even a nodule. It is most unfortunate that literature of Meig's syndrome does not reveal the time duration where laparotomy was done after the appearunce of ascites, since it may be that we have done a laparotomy too early 'in two weeks' not giving sufficient time for the fibroma to be macroscopically visible.
2. Other possibility is that this is an unusual presentation where ascites preceeded the tumour.

3. In retrospect it was considered whether it would have been better if an ovariotomy was done at the initial laparotomy as it would have possibly saved the patient a lot of discomfort, expense and shortened her s tay in hospital. However this was not done since during the laparotomy no solid ovarian tumour was detected discarding Meig's as the aetiology. Even if this was considered since there is no association between follicular cysts and fibroma we would not have known which ovary to be removed as it could have been advisable to sacrifice an ovary for a "possible tumour".

Finally a lesson to learn from this case was the value of a second look laparotomy especially in the undiagnosed atypical cases.

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Double spaced typescript (not carbon copies) should be submitted, Brevity is a virtue. The author's name, his degrees and relevant diplomas together with his appointment at the time of preparation of the text should be submitted. Authorship should be limited to direct participants. Technical assistance can be acknowledged as a footnote. The usual plan-Introduction, Material and Meteods, Results, Discussion, a Summary and References should be followed wherever possible.

Each sentence should have its proper components, thus:

"Progress: The patient continued to improve", NOT

"Progress: Went downhill".

Numbers up to ten should be splt, unless they are contrasted with other numbers. Larger numbers should be in the form of numerals and not words except when beginning a sentence, thus "Twenty patients out of a total of 70 .'hixeq'tdie

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These should be avoided as far as possible. Abbreviations such as P. E. T., A. P. H. should be eschewed, Proper sientific names should always be spelt fully in the first instance. Dates should be given as 14th April 1962, and not 14. 4. 62. Drug should be designated by their official (generic) rather than their proprietary (trade) names.

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If the reference is to a joint publication, names of all authors should be indicated on first appearance e.g. (Ratnam M, Pieris. K.L., and Reid. B 1965), while in subsequent reference the form should be (Ratnam et al., 1965).

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Baird, D. 1965): Journal of Obstetrics and Gynaecology of the British Commonwealth, 2, 127.

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APPENDIX — ABBREVIATIONS

Blood Pressure	B.P.	Litre	l.
Centimetre	Cm.	Metre	m.
Cubic millimetre	cu. mm.	Microgram	mcg.
Feet	ft.	Milliequivalent	m Eq
Fluid ounce	fl. oz.	Milligram	mg.
Gallon	gal.	Minute	min.
Grain	gr.	Millilitre	ml.
Gramme	g.	Molar	M.
Hour	hr.	Ounce	oz.
Inches	in.	Per cent	%
International Unit	i. u.	Pint	pt.
Intramuscular	i. m.	Pound	lb
Intravenous	i. v.	Yard	yd.
Kilogram	kg.	Year	yr.

Bladder and Ureter Injuries in Obstetrics & Gynaecology

(with Case reports of seven recent cases)

By
J. Ashmore. F. Attapattu,*

Distressing vesico-vaginal fistulae due to poor obstetric care should certainly be a thing of the past. It is now over a century since Marion Sims attended to this common condition during his day. It should be equally distressing to the Obstetrician and Gynaecologist, as it is to the patient, to see bladder and ureteric injuries caused either by accident or negligence during operations. Traumatic obstetric vesico-vaginal fistulae and post-operative uretero-vaginal fistulae are occassionally encountered by us today. Perhaps in an institution such as the Government Cancer Institute, Maharagama one may come across those due to malignant invasion of the bladder or those due to irradiation injuries. Reported here are seven cases of injuries to the urinary tract encountered by me during a period of three years from 1976 to 1979. These patients were attended to by me at De Soysa Hospital for Women, Colombo, Castle Street Hospital for Women, Colombo and the Base Hospital, Chilaw. Of the fistulae three are uretero-vaginal, three are vesico-vaginal and one vesico-cervical. All except two are probably the result of injuries sustained at operations.

Case 1.

Mrs. J. N. age 40 years was referred to the De Soysa Hospital for Women on 30th August, 1976 for the treatment of dribbling of urine since her third pregnancy 13 years earlier.

She had a bad obstetric history. First pregnancy — L.S.C.S. at term for placenta praevia. The baby died later. Second pregnacy – L.S.C.S. for Breech presentation and due to the past obstetric history.

Third pregnancy she had a ruptured uterus at term which had been repaired. Fourth pregnancy – A Shirodkar suture had been inserted for cervical incompetence, inspite of which she miscarried at 16 weeks.

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The urinary incontinence occurred from the 3rd pregnancy. She had the sensation of fullness of the bladder and had normal micturition. She was otherwise healthy medically as well as gynaecologically. On examination the vulva was normal. Speculum examination revealed a small collection of fluid thourght to be urine in the posterior fornix. A fistula was however not seen. The cervix and uterus were normal and there was no other pelvic pathology. The three swab test done in the ward indlcated the presence of a uretero-vaginal fistula, which was confirmed by an examination under anaesthesia on a later date.

Investigations:

Hb 10.2 gm %, W. B. C. 5,200 cell / c. u. m. m. N. 60%, L. 31%, E. 9%. Blood group O Rh+ve. The intravenous pyelogram revealed a normal renal excretion of the dye. The right ureter and bladder were normal in out line. The left ureter was grossly dilated, tortuous. There was evidence of hydronephrosis. The uretero-vesical junction appeared to be stenosed.

Treatment

A left ureteric transplant into the fundus of the bladder was performed on 28th September, 1976. At operation the left ureter was dilated to about a fingers breadth. Inspite of dense fibrous tissue at the left vretero-vesical junction it was possible to seperate the left ureter and divide it above the stricture. The left ureter was then transplanted into the fundus of the bladder via a short incision at the fundus of the bladder and sutured to the sub mucosa. A total hysterectomy was also performed at the samc time since the uterus was traumatised.

Post operatively, continuous bladder drainage with a Foley catheter and drainage of the ureteric bed with a corrugated drain were maintained. The bladder had to be syringed several times because of blockage and the cathter was removed on the 16th post operative day. The patient was discharged from hospital 6 weeks postoperatively completely cured of her symptoms.

Case 2.

Mrs. A. D. age 40 years was admitted to ward 8, at D. S. H. W. on 6. 9. 76. for investigation and treatment of leaking of urine through the vagina. On 8th April, 1976 a total hysterectomy and a bilateral salpingo-oophorectomy had been performed at a Base hospital for a 14 week size growth arising from the uterus with extensive spread within the pelvis. Histologically the lump was found to be a leiomayo-sarcoma of the uterus. The patient had an uneventful post operative period but shortly after going home 3 weeks later she had developed incontinence of urine. Sensation of bladder fullness which was initially present gradually disappeared. At the time of admission she was in very poor state of general health. There was clinical evidence of probable secondary deposits in the cervical and lumbar spine. Pelvic examination revealed a vesico-vaginal fistula about 1½ finger breaths, about 3" from the urethral meatus. The haematological investigations were normal although the blood urea was elevatdd at 81 mg%.

It was decided to attempt a repair operation as a palliative measure. Inspite of dense fibrosis it was possible to separate the bladder from the vagina. The repair was completsd with 2 layers of catgut transversely on the bladder and nine interrupted nylon suturcs on the vagina. Post operatively continuous drainage of the badder was maintaine using a Foley eatheter. She was found to be completely free of urinary incontinence. However, dissemination of the malignancy including bone and intracranial secondries, was noted from the 12 th post operative day. 3 weeks after surgrry she was taken home by the relatives who felt that the terminal care could be done at home.

Case 3.

Mrs. H. M. D. age 40 years. Para eleven was admitted to ward 8, D. S. H. W. on 8. 10. 76 for treatment of urinary incontinence per vagina with no sensation of bladder fullness. Her symptoms started following her last delivery at a provincial hospital in April, 1976 which was a still birth due to post maturity. The delivery of the dead fetus had been expedited by perforation of the foetal head and application of Anderson's forceps. Following the delivery, ligation and resection of the fallopian tubes had been done.

At the time of the present admission the patients's general condition was satisfactory. On pelvic examination a small opening about 0.5 cms. in diameter was found in the anterior vaginal wall in the mid line about 4 cms. above the urethral meatus. There was no other gynaecological pathology to be detected. When a three swab test with 0.5% Methylene blue was performed the middle swab was found to be stained and wet. A vesico-vaginal festula was thought to be present.

Investigations - Hb 9.8 gm%. and the blood urea was 20 mg%

The repair of a vesico-vaginal fistula was performed using the same technique as in Case 2. Post operatively continuous bladder drainage was maintained using a Foley Catheter which was removed on the 14th post operative day. The nylon sutures in the vagina were removed on day 18 post operatively. At the time of discharge from the ward 3 weeks after operation she had normal urinary continence.

Case 4.

Mrs. K. L. W. A , a 23 year old multipara was admitted to ward 8 of the D. S. H .W. on 18th February, 1977 with a history of dribbling of urine per vaginam since her last baby on 19th October, 1976. A lower segment Caesarean Section was performed for lack of progress of labour and fetal distress on 11th September, 1976 , by one of the Seinor House Officers. A live baby was delivered. She had a stormy post-operative period with severe abdominal distention, high fluctuating tempetature and an offensive discharge per vagina. On 4th September 1976 she had a burst abdomen and was repaired· Culture of the pus per vaginam yielded Klebsiella and E. Coli sensitive to only Gentamycin and Neomycin. She was treated with Gentamycin 40mg. I. M. three times a day. The abdominal wound healed. She was discharged from hospital on 21st November, 1976. At the time of discharge she has had a profuse white discharge per vaginam The baby while in the ward developed an eye discharge and pustules all over the body and was treated with Genatamycin I. M. While at home she had noticed that the discharge per vagina was increasing and she found her self wet all the time, even though she had full control of her bladder. She attended the gynaecological clinic one month later and was edvised admission on 4th October, 1979

and was discharged on 19th December, 1979 after the investigations were completed and was requested to seek admission later. But she did not turned up on the due date, instead she sought admission on 18th F bruary, 1977 as the complaint of urine dribbling throuhg the vaginam without her knowledge had become much worse. She now complained of backache and dysuria.

There was nothing abnormal with her menstrual history. She had four previous pregnancies, all terminating in normal deliveries at term. Only one child was now alive.

She was of average build. The general condition was satisfactory. The cardiovascular and respiratory sysems were clinically-normal. The blood pressure was 120/80 mm. of Hg. The abdomen had a right sided paramdn had a right sided paramedian scar. There were no lumps or tenderness. The liver, spleen and kidneys were not palpable. The vulva was normal and showed no excoriation, The cervix was firm and uterus was anteverted, firm, regular, mobile and of normal size. The fornices were clear. The vagina was wet and contained urine.

The haemoglobin was 10.2g%. The white blood cell count was 14,000 neutrophils 71%, lymphocytes 26% eosinophils 2%. Blood urea was 26%. The urine contained 20 to 30 pus cells and protein. The blood group was A Rh possitive. The intravenous pyelogram showed the left ureter grossly dilated with hydronephrosis. The ureter was not visualised at the point it was entering the bladder. Both kidneys were functioning. The bladder outline was normal. She was taken up for repair of the utero-vaginal fistula on 26th February, 1977 under general anaesthesia. An indwelling Foley's catheter was introduced. A left paramedian incision was made and the peritoneal cavity was opened into. Both ureters were identified. The left ureter was found dilated and tortuous. The ureter was separated from the retroperitoneal bed after incising the peritonium over it. The bladder was pushed down from the anterior wall of the uterus. The left ureter was traced down to the lower end. It was found to end in a contriction just above the entry into the bladder. The isolation of the ureter at this end was only successful with much difficulty due to dense fibrous tissue. The ureter was divided just above the constriction and anastomosed into the bladder as in case 1. The operation was completed by leaving a corrugated drain in the area of diessection retroperitoneally. The peritoneeal cavity was closed. The addominal wall was repaired. She had one pint of group A Rh positibe blood during the operation.

The urine was clear by the fifth day. The catheter was removed on the 19th post operative day. She had no leakage of urine from the vagina and was discharges from the hospital. She has to date not reported to the clinic for review and repeat IVP inspite of two reminders.

Case 5.

Mrs. C. P., a 39 year old shouse-wife was admitted to my unit at De Soysa Hospital for Women, Colombo on 6th June, 1977 with a history of dribbling of urine through the vagina 21 days after a lower segment Caesarean Section on 1st January, 1977.

She was married and had four pregnancies. The first was a forceps delivery at term. The 4th pregnancy ended in a lower segment Caesarean Section at term. Up to this time she had been in good health. She had been admitted to a private hpspital in Jaffna for the 4th pregnancy and had been in labour for over 24 hours. She was later transferred to the General Hospital, Jaffna due to lack of progress of labur, She had a LowerSegment Caesarean Section on 1st January, 1978. She had an uneventlful postoperative perido and left hospital in ten days. On 27th January, 1977 she had noticed that she was dribbling urine through the vagina without her knowledge. Thereupon she sought advice at the General Hospital, Jaffna and had been investigated for 40 days. She was admitted to my unit on 6th June, 1977.

The periods were normal. The last menstrual period was on 5th June, 1977.

The blood group was O Rh positive. Hb was 11.0g%. Urine showed a field full of pus cells. Blood urea was 37 mg%. The white cell count was 4 800, neutrophils 58%, lymphocytes 3(%, eosinophils 6%. Culture of urine revealed heavya growth of E coli, sensitive only to Furadantin. Repeat culture of urine in two weeks revealed a heavy growth of Klebsiella spiecies sensitive to Furadantin and Nalidixic Acid. Serum chlorides were 102 mEq/Litre, Serum potassium 3.6 mEq/litre, Serum Sodium 140.8 mEq/litre. The ECG was normal. The Intravenous pyelogram done on 26th June, 1977 showed a grossly dilated

ureter with hydrohephrosis on the left side. The distal end of the ureter was not visualised. The left kidney was enlarged. The right kidney and ureter were normal.

Examination under anaesthesia was performed on 11th June, 1977. The vulva was normal. There was no excoriation of the skin. The vagina was wet with urine. The cervix was firm and the os closed. The uterus was of normal size. Speculum examination revealed dribbfing of urine from the vault of the vagina. The bladder was distended with diluted Methylene blue solution. The dye was not found to escape from the vagina. A diagnosis of uretero-vaginal fistula was made.

On 2nd July, 1977 she was taken up for Surgery. The left ureter was found enormously dilated and tortuous. It was found to disappear close to the bladder. The ureter was dissected off from its bed with a part of the parietal peritoneum carrying with it its blood supply The dissection was found to be much difficult about 1 1/2 inches from the fundus of the bladder due to dense adhesions. The bladder was separated from the anterior wall of the uterus with much difficulty. In order to facillitate the dissection it was decided to remove the uterus as the patient had completed the family. A total hysterectomy and left sided oophorectomy was performed. The left ureter when traced to the bladder was found constricted for a distance of about 1/2 inch from the entry into the bladder. The ureter was mobilised and divided about one much from the bladder. The stump of the left ureter was ligated. The other end of the ureter was spatulated. A stab incision was made on the fundus of the bladder on the left side and a mucosa to mucosa anastomosis was performed. The bladder was repaired as mentioned in case 1. A corrugated drain was left in the ureteric bed. Dissected areas were then peritonised. The peritoneal cavity was closed. The abdominal wall was repaired. A Foley's catheter was inserted into the bladder. She had two pints of blood.

At 8 p.m. on the same day her general condition was found to be low. The pulse was rapid and of low volume and tension. The blood pressure was 90 mm systolic. Fresh blood was found to flow out through the coraugated drain. The patient was resuscitated with blood transfusions. A repeat laparatomy was performed. through the same incision. The bladder base was explored. There were no bleeding points. The sutured peritoneum was undone and the bed of the left ureter was examined. Two bleeding points were detected and ligated. The raw area was peritonised leaving a corrugated drain. The peritoneal cavity was closed and the abdominal wall repaired. A Foley's catheter was left in the bladder.

The bladder had to be syringed several times with citrate solution due to blockage. The urine was clear by the 2nd day. The abdominal wound was found infected by the 9th day and the pus drained. The pus was greenish in colour. The patient was administered Colistin 1 milion units 6 hourly for one week. The catheter was removed on the 19th ay. Resuturing of the abdominal wound was done with nylon on 30th July, 1977. She was discharged the next day well and alive. There was no further dribbling of urine. She preferred to have the nylon sutures removed in the local hospital. She was requested to report to the clinic in three months for repeat IVP.

Case 6

Mrs R. P., a 50 year old hoasewife was admietted to my unit at Castle Street Hospital for Women, Colombo on the 4th of April, 1979 with a history of leakage of urine per vaginam, dysuria and backache of one years duration. She was married She had three pregnancies. The first pregnancy ended in an abortion. The second was a normal delivery at term five years after marriage. The third pregnancy was nineteen years ago and had been terminated by a Caesarean Section for prolonged labour at the De Soysa Hospital for Women, Colombo. She had been in good health till one year back when she developed irregular bleeding per vaginam. She had sought treatment at Castle Street Hospital for Women. Colombo and an examination under anaesthesia and dilatation and curettage were done. At the examination a long wire like black piece of Merz silk was found protruding into the vagina through the cervical os. This was pulled out. Examination of the vagina revealed no opening except that the vagina was found wet with uriene. The bladder was distended with diluted methylene blue and the dye was found to excape through the external os. A diagnosis of vesico-cervical fistula was made. The uterus was of normal size and retroverted. The fornices were clear. The patient was discharged but did not turn up for surgery as there was no driblling of urine for about a month thereafter.

The patient came under my care on 4th April, 1979 when she was readmitted to the Castle Street Hospital for Women, Colombo 8 with a history of dribbling of urine once more.

The generl condition was satisfactory. The patient had been febrile on an off, The blood pressure was 120/80 mm. of mercury. The pulse was 82 per minute. The cardiovascular and respiratory systems were clinically normal. A subumbilical midline incision was found.

At the examination per vaginam when a metal catheter was passed into the bladder a gritty sensation was felt. The presence of a vesical calculus was suspected. The vulva was normal. The vagina was wet with urine. The cervix was normal and the uterus retroverted and normal in size. There were no openings felt or seen in the vaginal fornices.

The blood group was O Rh positive. The urine was field full of pus cells. The white blood all count was 11.500, neutrophils 70% lymphocytes, 22% eosinophils 8% The haemoglobin was 10.2g%. The urine culture showed a heavy growth of E coli sensitive to Nalidixic acid and gentamycin. The IVP showed bilateral hydronephrosis and hydroureter and a large vesical calculus. It was decided to remove the calculus transvesically and visualize and repair the vesico-cervical fistula., through the bladder. She was taken up for surgery on 3rd May, 1979. The bladder was dissected extra-peritoneally and a vertical incision 1 1/2 inches was made into it through the fundus. A large calculus with a gritty surface about 3 inches in diameter was found impacted in the bladder. Attemptes at removing the calculus enmasse failed. It was removed piecemeal. Entwined round one portion of the calculus was a wire like piece of black merz silk about 1 1/2 inches long. The bladder was washed out repeatedly with saline. The bladder mucosa was found grossly inflammed and the ureteric orifices could not be visualised. Ureteric catheterisation failed. A communication of the bladder with the cervix could not be established, due to inflammation of the mucosa. Both uteters were dissected out and traced to the bladder. The contiunity of the left ureter with the bladder could not be established due to dense fibrous tissue. The bladder was repaired as described in case number one. Two corrugated drains were left in the ureteric beds. Raw areas were peritonised. The peritoneal cavity was closed. The adbommal wall was repaired. A Foley's catheter was left in the bladder.

Three bottle suction drainage could not be used as the only unit in the hospital was being made use of in another ward She had Gentamycin 80mg. three time a day for one week. Thereafter she had Mandelamine orally. The urine cleared up by the 5th day. The drainage tubes were remaved on the 3rd day. The catheter was getting blocked on and off and by the 8th day leakage of urine was noticed from the lower part of the abdominal wound. This cleared up by the 18th day. All sutures were removed on the 13th day post-operatively. Spigotting of the catheter was commenced at 4 hourly intervals on the 20th day. The catheter was removed on the 21st day. The patient was fully continent with no leakage of urine from the vagina or the abdominal wall. She was discharged well and alive onthe 24th post-operative day.

She was readmitted to ward 1 of Castle Street Hospital for Women. Colombo on 6th June, 1979 with a history of a watery discharge through the abdominal wall of one weeks duration. A vesico cutaneous fistula was suspected. However with continuous drainage of the bladder the leakage cleared up and the patient was discharged from the hospital on 19th June, 1979.

Case 7

Mrs. T, a 28 year, old housewife was dadmitted to my unit at the Base Hospital, Chilaw on 27th July, 1979 with a history of dribbling of urine per vaginnm of seven years duration. She had two prsgnancies. The first was a normal delivery at term in hospital. For the second she was admitted in labour to the District Hospital Koslanda in 1972. She was in labour for four days. Later She was transferred to the General Hospital, Badulla for lack of progress of labour At Badulla a ruptured uterus was suspected and a Lapartomy performed. The suspicion was confirmed and a subtotal hysteretomy was performed. The baby was dead. A few days after diseharge from hospital she had developed dribbling of urine per vaginam. The symptoms had warsened during the last six months.

She was poorly nourished. The blood pressure was 120/80 mm. and the pulse was 84 beats per minute of good volume and tension. The cardiovascular system and respiratory system were clinically normal. There waa a sub-umbilical median laparatomy scar. The liver, spleen and kidneys were not enlarged. There were no other lumps.

An examination under anesthesia was performed on 6th August, 1979, On catheterisation a gritty sensation was felt when the catheter was moved inside the bladder. The urine was

cloudy. The presence of a vasical calculus was suspected. The vulva was wet with urine· The cervix was firm and the os closed. There was no body of the uterus. An opening of about 1/2 inch diameter was seen in the vagina about two inches proximal to the urethral meatus on the left lateral vaginal wall. Urine was found to escape from it. The bladder was distended with diluted methylene blue. The dye was found to escape through the the vagina. A diagnosis of vesieco-vaginal fislula was made. The blood group was B Rh positive. The haemoglobin was 30%. The urine was field full with pus cells. The white cell count was 12,500, neutrophils 74%, lymphocytes 20% eosinophils 6%. The blood urea was 28.5mg%. The surum cholorides 105 mEg/litre, sodium 137.6 mEg/litre. The IVP revealed a grossly dilated and tortuous left ureter and hydronephrosis. The last inch of the ureter was not visualised. The right ureter and kidney were normal. A decision was taken to repair the vesico-vaginal fistula by the vaginal approach and to explore the left ureter and to remove the calculus by opening into the bladder.

On 13th August, 1979 she was taken up for surgery. The vesico-vaginal fistula was repaired on the same principles as outlined in case number 2. Six interrupted nylon sutures were used to approximate the vaginal wall edges. After excision of the laparotomy scar the peritoneal cavity was opened into. The bowels were packed off. The left ureter was found enormously dilated and tortuous. It was dilated to about the breadth of a middle finger. The left kidney felt larger. The right ureter and kidney were normal. The bladder was markedly thickened. The left ureter was dissected off its bed and traced to the bladder. Close to the bladder for about an inch there was considerable difficulty in mobilisation. The ureter in this region was found to be quite narrow and was about 1/8th the size of the proximal dilated part. The ureter was divided at about the point where narrowing commenced. The vesical part was ligated. The fundus of the bladder was opened into on the left side by a vertical stab incision. The finger was introduced into the bladder and a calculus about one inch in diameter was felt and removed. The bladder was washed out with saline. The left ureter was then anastomosed mucosa to mucosa after spatulating its end as described in case number one. A corrugated drain was left in the ureteric bed. The raw areas were peritonised. The peritoneal cavity was closed. The abdominal wall was repaired in layers. A Foley's catheter was left in the bladder for drainage.

Post-operative care was as described in case number two. She had Gentamycin 80 mg I. M. for one week and thereafter Mandelamine. The corrugated drains were removed on the 4th day. On the 8th day leakage of urine was noticed through the abdominal wound, as the catheter was getting blocked on and off. This however cleared up. Sigotting of tue catheter at 4 and 6 hourly inteevals was commenced on 3rd September, 1979. There was no leakage of urine. The vaginal sutures were removed under general anaesthesia on 7th September, 1979. She was found continent. She was discharged well and alive on 8th September, 1979.

Discusion

Due to the intimate relationship of the vagina with the lower part of the urinary tract, in the female, injury to the urinary tract often manifests itself by the uncontrolled passage of urine per vaginam with or without the sensation of bladder fullness. Occasionally continiuty of the urinary tract with the uterus results in the discharge of urine primarily through the cervix and the discharge through the vagina is only secondary to it.

As stated earlier the obstetrician and gynaecologist occasionally is responsible for urinary tract injuries. The obstetrician due to the neglect of a mother in labour and the gynaecologist due to poor surgical techniques Fistulae resulting from poor obstetric care are often vesico-vaginal, while those from gynaecological surgery may involve the ureters as well.

It is evident from the sequence of events, that the vesico-vaginal fistula in case number 7 had resulted fron ischaemic necrosis due to prolonged labour. The narrowing of the ureter for one inch in this case cannot be accounted for except by assuming that there had been some form of trauma to it at surgery. Cases 2, 3 and 4 are the result of the operative techniques employed.

Case number one which gives the details of a uretero-vaginal fistula resulting from a ruptured uterus is somewhat rare; the usual eventuality being a uretero-cervical or vesico-vaginal fistula. It may be presumed that a minor injury to the bladder may have healed with continuous drainage details of the repair of the uterus were not availabe.

Case number 3 is one of a vesico-vaginal fistula resulting from craniotomy. This was probably produced as a result of the perforator being used without due care. Case number 4 is one of uretero-vaginal fistula resulting from a Caesarean Section. The possibility is that the incision extended into the broad ligament causing this injury. Case number two is one of a vesico-vaginal fisutula resulting from a total hysterectomy. It is possible that the bladder was injured when it was being pushed down from the anterior aspect of the uterus and vagina or that it was accidently inused; the injury not being recognised at the time of the operation. Case number 7 is interesting. This patient had complained of irregular bleeding per vagina in additiona to the leakage of wrie. Her history revealed that a Caesarean Section had been performed some years ago at the De Soysa Hospital for Women, Colombo. This was the time when upper segment Caesarean Sections were performed using merz silk in one of the obstetrical units. It has been experienced that this unabsorable suture material starts migrating from the myometrium either towards the endometrium or bladder or both. with the passage of time. The irregular bleeding this patient complained of was probably due to this foreign body within the endometrium. At curettage a long strand of merz silk was pulled out through the cervical os. The leakage of urine through the cervix was probably due to the fact that the other end of the merz silk had migrated into the bladder thereby establishing a fistulous communication with the cervical canal. This explains the a etiology of the vesico-cervical fistula in this patient. The vesical calculus removed at operation showed the part of the merz silk which had migrated into the bladder. Mendis (1970) with a ten year experience reports on nine cases of uretero-vaginal fistulae treated by implantation into the bladder. Six followed abdominal hysterectomy, two lower segment Caesarean Sections and one following Werthiem's hysterrectomy.

TABLE I.

The causes of urinary tract Injury are several. (Table I). They are broadly classified into congenital, accidental, obstetric, operative, infective and irradiation fistulae. One may occasionally see fistulae due to a congenital cause. Mitchell (1961) reports a case of ectopic vaginal ureter, indicating the difficulties encountered in its diagnosis. The gynaecologist seldom sees those resulting from fractures of the pelvis. In Sri Lanka fistuale resulting from infective conditions such as tuberculosis, lymphogranuloma venereum are hardly met with. Billharzia is not found in Sri Lanka. Those due to extention of carcinoma of the cervix into the bladder are unfortunately still prevalent. With advances in the field of radiotherapy those resulting from irradiation should be rare.

A practising gynaecologist in Sri Lanka still comes across fistulae resulting from obstetrical and operative causes. Most fistulae due to Obstetrical causes are those resulting from ruptured uterii with extension into the bladder or ureter. Some of these are also due to pressure necrosis. In certain remote areas of Sri Lanka a grand-multipara with an unstuble lie often has to travel several miles to get to a base hopital with operating theatre and blood transfusion facillites. The occurence of ruptured uterii as one would expect is therefore not rare. Prolonged labour in years gone by was defined as a labour lasting more than 72 hours. Today no labour is allowed to extend over 24 hours. Hence vesico-vaginal fistulae due to pressure necrosis is seldom seen by us today.

Bizzare obstetric manipulations are hardly ever resorted to in modern obstetric practice. Destructive operations on the fetus such as craniotomy or cliedotomy is occasionally done. If done with the knowledge that while extracting the dead fetus the maternal tissues too could be seriously injured, the incidence of vesico-vaginal fistulae from this cause could be minimised. Trying to "fish a head above the pelvic brim by the application of high forceps is an obstecric "sacrilage". If at all a forceps delivery is envisaged all canditions for the application of forceps should be satisfied and a safe instrument used. The Kiellands forceps which could in addition be used for rotation of the foetus is certainly not an instrument for the amataur. Extensive injuries to the bladder, vagina, perineum and even complete avulsion of the urethra are recorded. In certain primitive countries symphysiotomy is still practised to permit a little more room in the pelvis for the fetus to be born. The bladder neck is particularly exposed to injury if the thighs are forcibly abducted. (Seedat and Crichton, 1962).

Today the lower segment Caesarean Section is the most frequently perfoimed operation in obstetrics. The urinary tract especially the bladder is prone to trauma if proper care is not exercised when incising or tearing the lower segment. We do not tear the lower segment instead an incision

is made under direct vision. The ureter is ocassionally injured when the lower segment tears beyond into the broad ligament. Case 4 is the which has occurred in this manner.

TABLE 2.

In considering the repair of vesico-vaginal fistulae a practical classification on an anatomical basis as in table 2 is worthwhile. Moir (1971) states "The treatment of vesico-vaginal fistula has a facination of its own. No branch of surgery calls for greater resources, never is patience so sorely tried, and never is success more dependent on the exercise of constant care both during the operation, and even more perhaps during the anxious days of convalesence. But never is reward greater".

Moir continues "-who finds, as it were, than life has been given a new and that she has again become a citizen of the world. To J. Marion Sims more than to any man is due the honour for this transformation".

It is not my intention to discuss all the details of management of urinary fistulae. The broad principles are outlined. In considering the management of vesico-vaginal fistulae, like any other major operation a complete pre-operative assessment of the patient is a must. Urinalysis, Blood investigations such as the haemoglobin, urea, white cell count should be done % Cystoscopy is an advantage. An intravenous pyelogram to locate the area of the lesion and fuinction of the kidneys is mandatory. Excoriation of the vulva should be attneded to by application of silicone cream or aluminium paint. Every repair operation should be preceeded by an examination under anaesthesia, when the fistula could be confirmed by injecting metheylene blue into the bladder, the number of fistulae ascertained, the presence of vesical or vaginal calculi detected and cystoscopy performed if necessary.

TABLE 3.

Table 3 shows the various operations available for the repair of vesico-vaginal fistulae. While genito-urinary surgeons prefer the transvesical and transabdominal approaches gynaecologists are usually faithful followers of Sim's and prefer the vaginal approach. The two vesico-vaginal fistulae reported here were repaired in the lithotomy position under general anaesthesia. Some prefer a modified knee elbow position. Adequate exposure is essential. We preferred to use monofilament nylon on the vaginal wall due to its ready availablity and nnmber 3/0 cat gut on the bladder wall. Before making a circumferential incision around the fistula we injected 1 in 200,000 adrenaline in normal saline into the vaginal wall just outside the fistula. This helped in minimising haemorrhage and in the separation of the vaginal wall from the bladder wall. Very small swabs on mosquito forceps were used to assist. All fibrous tissue was cleared and the bladder wall was repaired by a continuous suture using number 3/0 cat gut. The mucosa was avoided. A Lembert type of suture embeds the 1st line of sutures. The vaginal wall was repaired using intertupted nylon sutures. Drainage of the bladder after repair is the single and most important step during the pos-operative period. This is done by one of several means. Simple drainage could be achieved by connecting the Foley catheter to a bottle beside the bed. The problem here is that it tends to get blocked. "Two bott'e" suction drainage is advised by Moir (1967). Drainage could also be stepped up by the use of an electric pump. Supra-pubic drainage or vaginal cystotomy are the preference of some. We merely connected the Foley catheter to a bottle beside the patients bed. Drainage achieved by whatever means has to be continued for two to three weeks. After the lapse of this period we spigotted the catheter periodically in order to promote the bladder to regain its former tone. Urinary antiseptics or antibiotics are necessary during the post-operative period. The nylon sutures on the vaginal wall are removed about the third week after operation, preferably in the theatre. Observation for a few more days is helpful to detect any further leakage of urine per vaginam.

Repair of the fistulae should be undertaken at least two to three months after the original injury, when inflamation and infection have completely subsided. Success of the repair would depend on such factors as the digree of local fibrosis, number of previous attempts at repair, presence of infection and the suture materials used.

Injuries to the ureter seems to be commoner on the left side than on the right. In Higgin's series of 87 ureteral injuries 57.5% were on the left side, 31% on the right and 11.5% bilateral. The probable explanation for this is that at the levevl of the supravaginal cervix the ureter which lies about 1 1/2 centimeters from the cervix on the right side lies more closer on the left. The presence of the sigmoid colon on the left side may also prevent complete visualization. The principles

used in the repair of ureter injuries are esse nially similar to that used for the repair of vesico-vaginal fistulae. When dissecting the ureter out of its bed its blood supply should not be completely stripped off. Damaged tissue should be excised and sutures should not be under tension. Torsion and kinking should be avoided. Suture material used should be fine, leakage should be avoided and the site of repair should be drained extra-peritoneally.

Continuous bladder drainage is used for two three weeks. Post-operative follow up is essential. Blood urea, bacteriological examination of the urine and an intravenous pyleogram should be done to reassess kidney function.

TABLE 4.

The wide variety of operative techniques used in the repair of ureterovaginal fistulae is shown in table 4. Ureter injuries the gynaecologist sees being usually close to the bladder simple closure and reimplantation into the bladder are the two common techniques he uses in repair operations. In the two cases of uretero-vaginal fistulae reported by us the injury to the ureter was at the lower end. We excised the fibrous end or the ureter after dissecting it from its bed and then reimplanted the ureter into the bladder beside the original stump of the ureter having made a stab incision on the bladder. Before implantation the ends of the ureter were spatulated and the ends were brought into the bladder after having passed a strond of cat gut through each spatulated end, A mucosa to mucosa implantation of the ureter into the bladder was established. The stab incision on the bladder was repaired in the usual way and four ligatures were used to support the ureter at its entrance to the bladder. The site of repair was drained extra-peritoneally by a corrugated drain. Reflux of urine and secondary pyelonephritis could sometimes be a problem. Reflux could be prevented by the Politano Lead Better technique of tunnel formation in the bladder wall during implantation into the bladder (Harrow, 1968). When there is a gap of more then 2.5 centimetres between the cut end of the ureter and bladder one of two other simple procedures may be used. They are the Psoas Hitch implantation and the Boari flap operation. The principle udderlying both these operations is to use the bladder wall itself to bridge the gap resulting from the ureteric damage.

In the former the bladder is mobilised and the fundus of the bladder on the side is pulled up and stitched on to the poas muscle. The end of the ureter is then implanted into the apex of the stretched bladder. In lhe Boari flap operation a flap of bladder wall is prepared from the fundus of the blddder, its length not being more then twice the width of the base to ensure a good blood supply. The spatulated end of the ureter is then sutured on to the upper end of the bladder flap. The flap is then made into a tube by a continuous suture. This is strengthend by a second line of interruppted sutures. The bladdar defect is repaired in two layers in the usual way, Mallik (1961) reported on three cases with success.

Injuries to the ureter at the time of operation could take the form of a division, partial or complete, crushing, ligature or resection. When the division is close to the bladder implantation is the simplest. If the gap is large a psoas hitch implantation or Boari flap operation could be performed. If ligatured the ligature should be removed at once. If crushed the crushed part should be excised and one of the above mentioned methods used. If the ureter has been resected other methods such as nephrectomy, dermo-uretero-tresis, implantation into the bowel or advancement of the ureter by descent of the kindney may be employed. When the injury is not regognised at the time of operation the post-operative period could be stormy. There is no indication for immediate intervention except if the ureters have been ligated at vaginal hysterectomy and one or both have been ligated at abdominal hysterectomy, or urine is collecting in the pelvis or flanks. If ligated at vaginal hysterectomy the operation should be undone and the ligatures removed. If after abdominal hysterectomy pyelostomy, nephorstomy or lumbar ureterostomy may be required. Collection of urine in the flanks may be drained vaginally or abdominally. The above mentioned methods are the ones used to fight a crisis. This should be followed later after assessment of kidney function by one of the methods in table (4). Tables 5 and 6 details out the ways in which obstructive and operative fistulae could be repaired. With the extensive training given and the wide experience acquired in major gynaecological and obstetrical surgery in Sri Lanka by the young obstetrician and gynaecologist, when he is under training the incidence of operative urinary tract injuries must necessarily be small. It is comforting to note that the incidence of vesico-vaginal fistulae of obstetrics origin in Sri Lanka is on the decline (De Bond, 1970). This too should be our goal with uretero-vaginal fistulae.

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TABLE 1.
Causes of Urinary Fistulae

Accidental	Operative	Obststric	Disease	Radiation	Congenital
Fracture of Pelvis	1. Vaginal ops:	1. Pressure necrosis	1. Carcinoma cervix	1. High energy irradiation	1. Ectopic ureter
	2. Manchester Repair	2. Instrumental delivery	2. Carcinoma vagina	2. Radium alone (Doses over 6000r)	2. Urogenital Sinus
	3. Vaginal Hysterectomy	3. Obstructed labour	3. Lympho-granuloma venereum		3. Double ureter (3 to 5%)
	4. Total Hysterectomy	4. Caesarean section	4. Tuberculosis		4. Megalo-ureter
	5. Werthiem's Hysterectomy	5. Symphysio-tomy	5. Billhazia		
	6. Vaginal wall cysts				
	7. Diverticulae of Bladder				
	8. Urethral cyst				
	9. Sling operations for Incontinence				
	10. Vaginoplasty				
	11. Repair of bladder neck				

TABLE 2.
Anatomical Classification of Urinary Fistulae

1. Juxta-urethral
2. Mid vaginal
3. Juxta-cervical
4. Combination of above
5. Vault fistula
6. Combined fistulae

TABLE 3.
Operations for repair of Vesico-vaginal fistulae

1. Sim's vaginal operation in modern from
2. Transvesical operations
3. Transabdominal operations
4. Colpocleisis
5. Plugging of fistula by muscle grafts
6. Transplantation of ureters into Colon

TABLE 4.
Operations for ureteric repair

	Operation	Indication
1.	Simple cissure	Small injuries involving less than 1/3 of circumference
2.	Reimplantation in to the bladder	Damage to lower end of ureter, generally to bridge a gap of less than 2.5 cms
3.	Boari flap operation	When gap between ureter and bladder is long
4.	Psoas hitch implantation operation	As for Boari flap operation
5.	Uretero-ureteral anastomosis	Injuries without loss of tissue above pelvic brim
6.	Crossed uretero-ureterostomy	As in number 5
7.	Ileal replacement of ureter	When both ureters are damaged
8.	Nephrectomy	Functionless kidney
9.	Invagination of upper end of ureter into lower end	Difficult
10.	Dermo-uretero-tresis	Sometimes used when ureter is resected
11.	Advancement of ureter by descent of kidney (Harrada et al 1964)	Resection

TABLE 5.

Prevention of Urinary tract Injuries

(Obstetrical)

1. Bladder kept empty during labour
2. Labour terminated by Caesarean section Pifrolonged unduely.
3. Recognition of oblique lie and Prevention of obsteucted labaur
4. Recognition of brow and mento-posterior presentations in labour
5. Porceps delivery attempted only when the head is low and the pelvis adequate.
6. Kielland's forceps application attemped by experienced personel.
7. Care taken during destructive operations such as perforation, decapitation, cliedotomy.
8. Attention paid to previous Caesaan section and other uterine scars when the mother is in labour
9. Symphysiotomy – best avaided

TABLE 6.

Prevention of Urinary tract Injuries

(Operative)

Operation	Prevention
1. Vaginal hysterectomy & Manchester repair	1. Catherterization before operation. 2. Incision on anterior wall of vagina done carefully preferably after infiltrration with 1 in 200,000 adrenalin in normal saline. 3. Bladder pushed up gently. If mucosa is exposed-repair in two layers. 4. The bladder should be pushed both in front and on the sides as the ureters could be caught in a ligature. The ureters lie just half inch lateral to the cervix. 5. The pushed up bladder should be kept in position by a retracter when the clamping of of ligaments are done. 6. During clsoure of the peritoneum by a pursestring suture the bladder should not be caught.
2. Total hysterectomy	1. Catheterization done before operation. Air should not be allowed to be sucked in by maintaining pressure on the supra-pubic region till after the catheter is removed. An indwelling catheter may be used instead during the operation. 2. The infundibulo-pelvic ligament should be clamped closer to the uterus than the lateral pelvic wall. Some identify the ureter. 3. After the infundibulo-pelvic ligament and round ligament are clamped and divided the layers of the broad ligament should be opened out by the fingers as sometimes the ureter is high in the bread ligament. 4. Peritoneum of the utero-vesicai pouch should be incised well above the fundus of the bladder.

	5. Bladder should be completely pushed down both in front and the sides. Care should be exercised when doing this if a previous operation has been performed on the cervix, anterior wall of the uterus or bladder.
	6. Aii ciamps should be applied cisser to the uterus than the lateral pelvic walls.
	7. When clamping utero-sacral ligaments care should be exercised due to proximity of ureters.
	8. Ureters may be caught in clamp when trying to stop haemorrhage at the angles of the yagina.
	9. Ureters could be caught during peritonisation especially close to the utero-sacral ligaments.
1. Werthiem's operation	1. All precautions as for total hysterectomy.
	2. During isolation of the ureter care should be taken not to strip the ureters off their blood supply. Avascular necrosis of the ureter about the 10th post-operative day could result in a uretero-vaginal fistula.
	3. Ureter specially prone to injury if operation is done after radiotherapy.
	4. In a poorly selected case when the bladder is pushed down with force it may be injured.
2. Lower segment Caesarean section	1. Bladder should be catheterised before operation. Bladder could be drawn high up in obstructed labour.
	2. Dextrorotation should always be corrected before the lover segment is incised. The ureter may be displaced.
	3. Bladder should be pushed down both in front and the sides.
	4. When tears extend into the broad ligament causing haemorrhage extreme care should be taken when clamping the bleeding vessel.
	5. If the uterus is already ruptured extention of the rupture into the bladder or ureters should be checked before repair or hysterectomy.
3. Laparotomies	1. Distortion of the anatomy by broad ligament tumours could displace the ureter and it may lie at the base of the tumours. Trace ureter first before removing such tumours.
	2. When large tumours distort and shorten the infundibulo-pelvic ligament the ureter too may be displaced and liable to injury.
	3. Endometriosis and pelvic infection could produce dense adhesions and thereby distort normal anatomy. Great care should be exercised if hysterectomy has been decided on.
4. Cervical myomectomy	1. The ureters could lie very close to the tumour. Great care should be exereised at removal.

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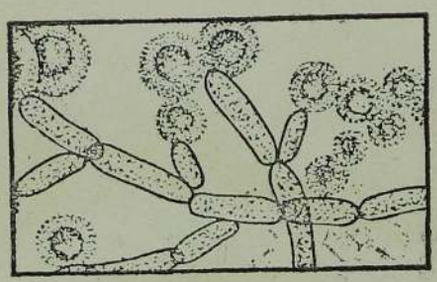

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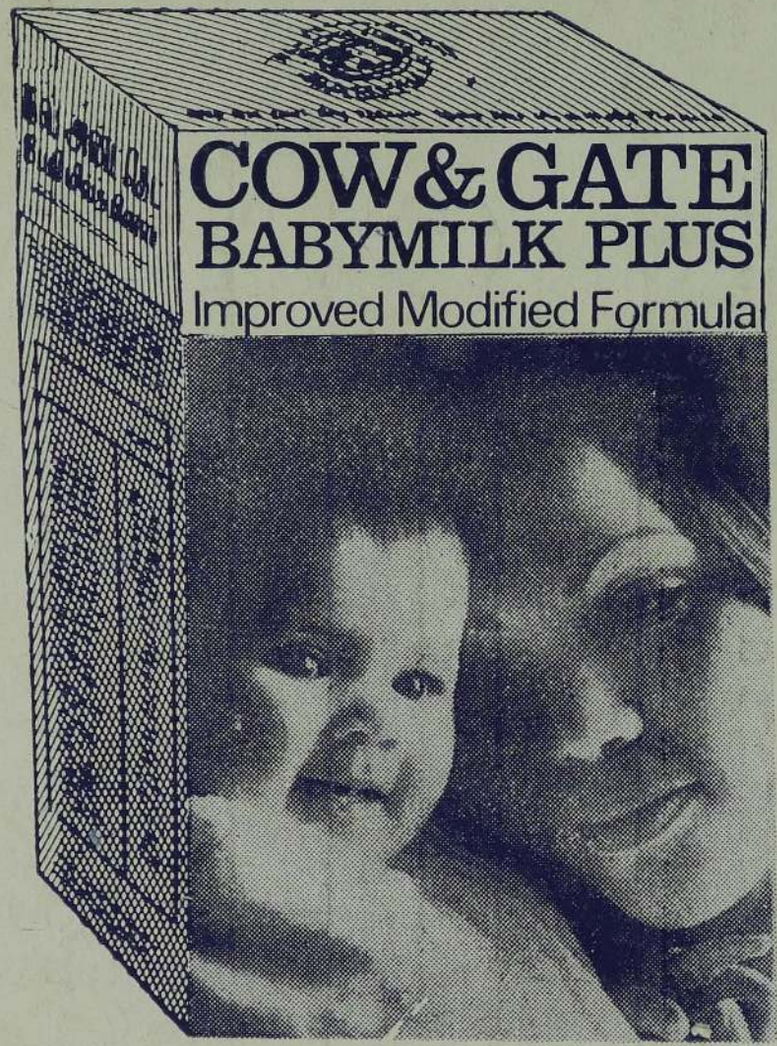

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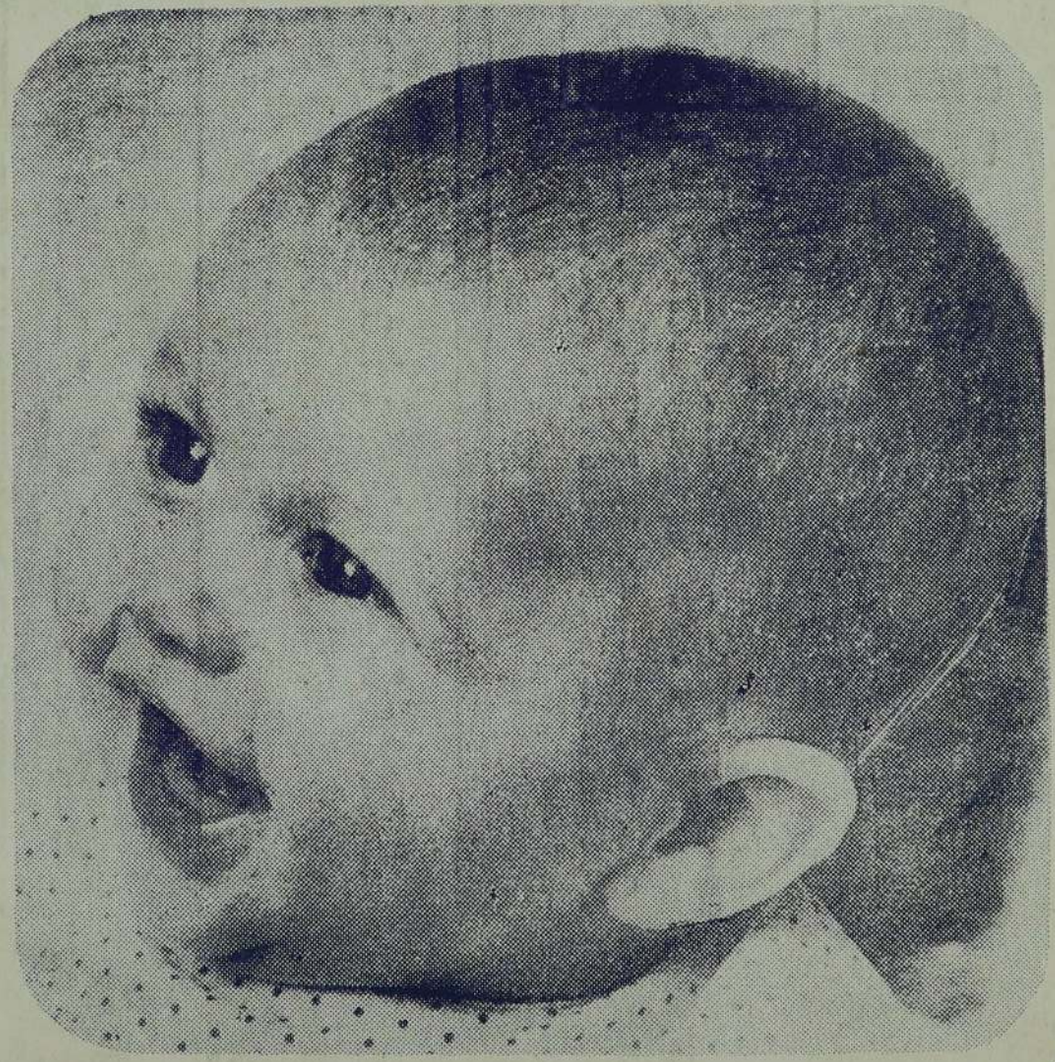

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