

A CLINICO—RADIOLOGICAL STUDY OF UTERINE SCARS

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The study of the long term effect of scars on the uterus has become imperative today as the medical termination of pregnancy act of 1971 permits termination upto 20th week of gestation. This work was undertaken to study the clinical and radiological sequelae of hysterotomy, caesarean and myomectomy scars in order to evaluate the risks involved with frequent hysterotomies that are being undertaken.

Review of Literature

Assessment of the efficacy of the uterine scar is of fundamental importance in deciding whether the uterine scar can withstand the stress of further vaginal delivery. Since the strength of uterine scar cannot be accurately judged clinically, hystero-graphy as a means to assess the uterine scar was performed by Baker in 1955. Other workers such as Poidevin

(1961), Waniorek (1963), Ende *et al* (1963), have also performed hystero-graphy to judge the integrity of uterine scar.

Material and Method

The present study was undertaken on women having scar on their uterus either due to previous caesarean section, hysterotomy or myomectomy. The clinical study was based mainly on the patients who were operated in the U.I.S.E. Maternity hospital during the years 1973 and 1974 and the radiological studies were undertaken in the Radiology Department of L.L.R. and Associated Hospitals, Kanpur. In these cases initially 2 ml. of dye was injected with patient in the lateral position and the film was taken followed by the injection of a further 2 ml. of the dye in supine position and second exposure was made.

Observations and Discussion

The clinical study was carried out during the period January 1973 to December 1974 included all the patients undergoing caesarean section, hysterotomy and myomectomy and also those cases who had a vaginal delivery follow-

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ing these operations during this period. In the present series 109 patients with previous caesarean section scars reported with pregnancy and out of these 74 cases had contracted pelvis needing repeated caesarean and remaining 35 had non-recurring conditions. The incidence of vaginal delivery following previous caesarean section was 54.3%. This shows that patients having previous scar in uterus for non-recurring conditions should be permitted vaginal delivery under strict supervision of the obstetrician.

In the present series scar rupture occurred in 3 cases, the incidence being

In the present series the incidence of scar rupture following caesarean section, in subsequent pregnancy was 0.52% and the incidence of repeat caesarean was 15.8%.

TABLE I
Incidence of Vaginal Delivery Following Previous Caesarean Section

Authors	Year	Percentage
Munro-Kerr	1964	60.0
Chosson <i>et al</i>	1970	59.0
Chakrabarthy	1971	33.3
Present series	1976	54.3

TABLE II
Incidence of Scar Rupture and Repeat Caesarean by Various Workers

Incidence of scar rupture			Incidence of repeat caesarean		
Authors	Year	Percentage	Authors	Year	Percentage
Riva and Teich	1961	0.93	Krishna Menon	1962	27.4
McGaarry	1969	0.24	Munnro-Kerr	1964	11.0
Frank	1972	1.4	Januja	1970	17.3
			Frank	1972	20.7
			More Wood	1973	42.5
Present series	1976	0.53	Present series	1976	15.8

2.75%. The rupture was in the lower segment in all 3 cases. The reason of these scar ruptures was that these patients came in obstructed labour due to contracted pelvis and they had febrile puerperium following previous caesarean which was done for obstructed labour after being handled by quacks.

Three cases of previous myomectomy came in labour and only 1 delivered vaginally. In 2 cases caesarean section had to be done because of uterine inertia. The myomectomy scars were found to be intact during operation.

Two cases of hysterotomy came with pregnancy during this period and out of these 2, one delivered normally and the other required caesarean section due to cervical dystosia.

Radiological Study and its Correlation with Clinical Findings

Hysterosalpingography was performed in 150 patients who had uterine scar. This included 100 (66.66%) cases of post-caesarean, 35 cases (23.3%) of post-hysterotomy and 15 cases (10%) of post-myomectomy group.

Post caesarean group included	No. of cases	Percentage
(a) After one caesarean sections	80	80
(b) After two caesarean sections	10	10
(c) After three caesarean sections	3	3
(d) After vaginal delivery following previous caesarean sections	7	7

Radiological Picture of Uterine Scar

The post operative uterine scar defect was visualized by taking A.P. as well as lateral films in all the cases. The type of scar defects were classified on the basis of the depth of the wedge in hystero-gram according to the criteria mentioned by Poidevin (1965) which are as follows:

1. Mild defect of 2 mm. depth or less.
2. Moderate defect from 3 mm. to 6 mm. depth.
3. Severe major defects of 6 mm. depth or more.

The hystero-graphic findings in cases of Postoperative uterine scars are shown in Table III.

The type of scar defects were correlated with the types of labour (Table IV).

In no case major scar defect was detected when caesarean was performed early in labour. Only one case of obstructed labour had a perfect scar. Moderate and major defects were observed in 29 out of 43 cases of obstructed labour.

In order to find out whether the complications in the post-operative period following caesarean section had any effect on the severity of uterine scar defect, a comparative analysis was made between types of scar defects observed in cases with complicated and normal, post-operative periods which is shown in Table V.

TABLE III
Hystero-graphic Findings in Cases of Postoperative Uterine Scars

Hystero-graphic findings	Postcaesarean uterine scar		Post-hysterotomy uterine scar		Post-myomectomy uterine scar	
	No.	%	No.	%	No.	%
Normal	14	14	10	28.57	2	13.33
Minor defect	35 (Plate 1)	35	16 (Plate 2)	45.71	5	33.33
Moderate defect	43 (Plate 3)	43	8 (Plate 4)	22.85	7	46.66
Major defect	8 (Plate 5)	8	1 (Plate 6)	2.8	1	6.66

TABLE IV
Correlation of Type of Scar Defect With the Type of Labour

Particulars of type of labour before caesarean section	Perfect scar with no defect		Minor defect		Moderate defect		Major defect	
	No.	%	No.	%	No.	%	No.	%
Early labour (48)	12	25.00	21	43.75	15	31.25	—	—
Obstructed labour (43)	1	2.33	13	30.23	26	60.47	3	6.98
Prolonged labour (9 cases) (Vide plate No. 5)	1	11.11	1	11.11	2	22.22	5	55.56 (Plate No. 5)

TABLE V
Correlation of Type of Scar Defect With Normal and Complicated Post-operative Periods

Post-operative phase	Type of Scar.							
	Normal		Minor defect		Moderate defect		Major defect	
	No.	%	No.	%	No.	%	No.	%
Normal Afebrile	9	9	18	18	13	13	—	—
Febrile	3	3	13	13	17	17	—	—
Postoperative distension	1	1	4	4	3	3	4	4
Postoperative distension with fever (Plates 3 and 5)	1	1	—	—	10	10 (Plate 3)	4	4 (Plate 5)

The classification of hystero-graphic appearance of scar areas in post-caesarean, post-hysterotomy and post-myomectomy cases is shown in Table VI.

In order to assess the effect of time interval between the date of surgery and hystero-graph the types of defects were analysed in Table VII.

Discussions and Conclusions

The comparative findings of other workers regarding hystero-graphic defects in the region of uterine scar following caesarean sections are shown in Table VIII.

Following conclusions were drawn from the present study of uterine scars.

1. Hysterosalpingography is a useful investigation for judging the integrity of post-operative uterine scars following caesarean section, hysterotomy and myomectomy.

2. In cases of post-caesarean section uterine scar, hystero-graph revealed minor defect in 35%, moderate in 43%, major in 8% and normal radiological findings in 14% cases.

3. The incidence of severity of the defect as judged by the depth of the pro-

TABLE VI
Correlation of Type of Scar Defect With Normal and Complicated Postoperative Periods

Deformity	Post-caesarean		Post-hysterotomy		Post-myomectomy	
	No.	%	No.	%	No.	%
Healthy uniform scar	67	67	23	65.71	1	6.66
Irregular scar varying depth. (Vide plate No. 4)	23	23	7	20.00	5	33.33 (Plate 6)
Sacculation of scar area	1	1	3	8.57	6	40.00
Beading of scar	6	6	1	2.85	2	13.33
Internal fistulation of scar area (Plate 3)	3	3	1	2.85	1	6.66

TABLE VII
Effect of Time Interval on the Development of Scar Defects

Time interval	Type of Scar				No. of cases							
	Post. C.S.				Post Hysterotomy				Post Myomectomy			
	N	Mi	Mo	Ma	N	Mi	Mo	Ma	N	Mi	Mo	Ma
Within 6 months	—	5	15	4	—	2	1	—	—	—	2	1
7 months to 1 year	—	8	11	3	—	11	3	1	—	3	3	—
1 to 2 yrs.	4	10	4	—	—	1	4	—	—	—	—	—
2 to 3 yrs.	3	—	3	—	5	2	—	—	—	1	—	—
3 to 4 yrs.	—	3	—	1	4	—	—	—	2	—	2	—
4 to 5 yrs.	7	2	8	—	1	—	—	—	—	—	—	—
5 to 6 yrs.	—	2	—	—	—	—	—	—	—	1	—	—
6 to 7 yrs.	—	1	2	—	—	—	—	—	—	—	—	—
7 to 8 yrs.	—	4	—	—	—	—	—	—	—	—	—	—

(N = Normal, Mi = Minor, Mo = Moderate, Ma = Major).

TABLE VIII
Scar Defects Following Caesarean Section

Findings in the scar area	Ende <i>et al</i> (1963)	Valasco <i>et al</i> (1964)	Poidevin (1965)	Barns <i>et al</i> (1968)	Muker- jee <i>et al</i> (1972)	Present series (1976)
Perfect scar without any defect	46.16	45.00	21.28	50	75	14
Minor defect	53.84	30.66	29.70	20	20	35
Moderate defect	—	—	40.07	—	—	43
Major defect	—	—	6.93	30	5	8

jection over the scar area was highest when the caesarean section was done in cases with obstructed and infected labour, intermediate with prolonged labour in hospital and lowest when caesarean section was done in early labour.

4. The severity of the post-caesarean section scar defect, as revealed by hystero-gram is related to the clinical course during puerperium.

The incidence and severity of scar defects are higher when the puerperium was febrile or was associated with post

operative distinction or both, as compared to cases of uneventful puerperium.

5. The incidence and the severity of scar defect in hystero-grams are inversely proportional to the time interval between the operation done and hystero-gram taken.

6. Hystero-gram revealed mild defect in 16 (45.71%), moderate in 8 (22.85%), major in 1 (2.8%) and no defect in 10 (28.5%) cases of postoperative uterine scar following 35 cases of hysterotomy.

7. In cases of postoperative uterine scar following 15 cases of myomectomy, mild defect was observed in 5 (33.33%),

moderate in 7 (46.66%), major in 1 (6.66%) and perfect scar area in 2 (13.33%) cases.

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See Figs. on Art Paper III-IV