

A STUDY OF 2,987 CONSECUTIVE EPISIOTOMIES

NORMAN R. KRETZSCHMAR, M.S., M.D., AND CARL P. HUBER, M.A., M.D.,
CHICAGO, ILL.

*(From the Department of Obstetrics and Gynecology, The University of Chicago and
The Chicago Lying-in Hospital)*

AN OPERATIVE procedure which is frequently performed may gradually become ignored as a possible source of complications. This is particularly true if the procedure is undertaken only as a portion of the treatment of the patient. In many respects this is the present attitude toward episiotomy. This study was undertaken in an attempt to evaluate episiotomy from this standpoint. A comparison is also presented between two common methods of repair of episiotomy.

The material upon which this study is based was obtained from a review of the records of all patients delivered in the Chicago Lying-In Hospital from July 1, 1933 to June 30, 1935. During this period there were, 5,624 hospital deliveries. Episiotomy was performed in 2,987 of these deliveries (Table I). The incidence of episiotomy is therefore 52.9 per cent in this series. Slightly less than one-half of the total group of patients were being delivered for the first time. In nearly every instance the episiotomy was performed upon a primipara or upon a patient who had had a previous episiotomy.

Indications.—Episiotomy is usually performed in an attempt to minimize the injury to the birth canal which occurs with the passage of the presenting part and after-coming head over the perineal body. If the outlet is not enlarged by such a procedure, laceration occurs in 50 to 60 per cent of primiparas. Episiotomy becomes increasingly indicated when the perineum has less than the normal elasticity due to such conditions as advancing age, extreme muscularity, perineal scars, or congenital deficiencies. In the presence of a large or firm fetal head the danger of perineal rupture is increased. Contracted pelvis, particularly of the funnel type, necessitates a greater encroachment of the fetus upon the posterior part of the pelvic outlet and increases the frequency of perineal tears. Rapid delivery occurring before adequate dilatation of the soft parts has been accomplished indicates episiotomy

to protect the perineum from serious laceration and also to protect the fetus from sudden increase in intracranial pressure. When episiotomy is indicated it should be performed soon after the presenting part has descended to the pelvic floor rather than when perineal laceration is imminent. This not only preserves the integrity of the pelvic floor but subjects the fetus to a lesser degree of trauma.

Technic.—Mediolateral episiotomy is the type in routine use at the Chicago Lying-In Hospital. The depth of the incision varies, of course, in the individual case but has usually been sufficiently deep to cut the superficial portions of the levator ani muscle. In nearly all instances the repair has been performed at the completion of the third stage of labor.

Two general methods of repair have been employed. In nearly three-fourths of the cases (72.6 per cent) nonabsorbable suture has been used. In this type of repair the edges of the vaginal mucosa are approximated with interrupted catgut suture. The muscle of the perineal body and the skin edges are brought together with deep interrupted, figure-of-eight, silkworm sutures. Usually four to six such sutures are used. They are tied loosely and at the completion of the repair the skin edges are accurately approximated and fixed with Allis clamps which are left in place for ten to fifteen minutes. This is the type of repair which the internes are instructed to use and which is routinely performed for teaching purposes.

TABLE I. CHICAGO LYING-IN HOSPITAL, JULY 1, 1933, TO JUNE 30, 1935

Total No. deliveries	5,624		
With episiotomy	2,987	52.9%	
Without episiotomy	2,637	47.1%	
<i>Episiotomy</i>			
	TOTAL	INFECTED	PER CENT
Silkworm-gut repairs	2,170	56	2.5
Catgut repairs	817	11	1.3

In the other method catgut is the primary suture material used. Either continuous or interrupted sutures are used to approximate the muscle and subcutaneous tissue. The vaginal mucosa is closed with catgut and the skin edge with either catgut or a subcuticular silkworm suture.

During the delivery particular attention is paid to hemorrhage from the episiotomy wound. This is usually controlled satisfactorily by the pressure of a sponge in the incision. Bleeding vessels are clamped and tied prior to delivery. During the repair any bleeding points are carefully ligated. The amount of blood loss may be considerable and hemorrhage is one of the dangers of episiotomy, difficult perhaps to evaluate but of undoubted importance.

Care of the perineum during the puerperium has been the same in the two types of repair. It consisted of perineal irrigations following voiding or defecation. Heat has been applied in the form of saline packs when discomfort is present. Careful inspection of the perineum is routine when any abnormality is suggested. The silkworm sutures are removed on the eighth postpartum day except when earlier removal may be indicated for drainage.

Immediate Results.—Healing of the episiotomy incision takes place with equal rapidity in the two groups. In the absence of infection there is no apparent difference in the amount of discomfort. Pulling of the sutures may occur in either group and the amount of soreness present depends to a considerable degree upon the tension used in tying the sutures. Ample room should be allowed for the edema which usually develops. Care should be exercised in tying the silkworm sutures so that the cut ends will not prick the skin surface.

Infection of the episiotomy wound was present in 67 patients of the total group. The incidence of infection is therefore 2.2 per cent. The incidence is slightly higher in those repaired with silkworm suture. In the 2,170 patients repaired in this manner 2.5 per cent (56) showed infection. In the catgut repair series 11 of the 817 patients (1.3 per cent) had infection in the wound (Table I). Many of the infections were of minor character as is evidenced by their relation to febrile morbidity. Interesting in this connection is the fact that in the silkworm group only one-half of the infected patients had sufficient elevation of temperature to be considered as morbid (Table II). In the catgut group, however, 9 of the 11 patients with infec-

TABLE II. MORBIDITY

	TOTAL	TOTAL NUMBER MORBID	PER CENT	MORBIDITY DUE TO EPISIOTOMY
Silkworm gut	2,170	278	12.8	28
Catgut	817	113	13.8	9

Follow-Up

	TOTAL	GOOD		FAIR		POOR		NO RECORD	
		NO.	%	NO.	%	NO.	%	NO.	%
Silkworm gut	2,170	1,006	46.3	375	17.2	49	2.2	740	34.1
Catgut	817	336	44.8	49	5.9	9	1.1	393	48.1

tion were classed as morbid. It would appear that infection in the latter group was more extensive or that it was not as readily recognized so that early drainage could be established.

The incidence of infection shows, as would be expected, a correlation with the type of procedure used to complete delivery (Table III). Approximately one-half

TABLE III. OPERATIVE PROCEDURES

	TOTAL	SILKWORM-GUT			CATGUT		
		TOTAL	IN- FECTED	PER CENT	TOTAL	IN- FECTED	PER CENT
Spontaneous delivery	1,631	1,233	25	2.02	398	1	0.25
Low forceps delivery	1,029	687	14	2.03	342	8	2.31
Midplane forceps	184	136	10	7.3	48	-	-
Midplane forceps with Dührssen's incisions	32	27	-	-	5	-	-
Breech extraction or for- ceps on after-coming head	75	63	5	7.9	12	-	-
Twins with interference	9	8	-	-	1	-	-
High forceps	10	5	1	20.0	5	2	40.0
High forceps with Dührssen's incisions	11	9	-	-	2	-	-
Version and extraction	5	2	1	50.0	3	-	-
Craniotomy	1	-	-	-	1	-	-
Total	2,987	2,170	56		817	11	

of the episiotomies preceded natural delivery. The incidence of infection is lowest in this group and increases with the complexity of the obstetric procedure performed. It is to be noted that comparable numbers of the various operative procedures were done in the groups with the two types of repair. The incidence of low forceps deliveries was 31.6 per cent in the silkworm group and 40.8 per cent in the catgut group, while in midplane forceps, the figure was 6.2 per cent and 5.8 per cent, respectively. The other operative procedures show a similar parallel so that this is not a significant factor in the evaluation of the two methods of repair.

TABLE IV. TOTAL MORBIDITY

TYPE OF DELIVERY	NO. OF CASES	UPPER GENITAL TRACT INFECTION	INFECTED PERINEUM	FEMORAL THROMBOPHLEBITIS	UPPER RESPIRATORY INFECTION	URINARY TRACT INFECTION	MASTITIS	UNDETERMINED	MISCELLANEOUS	TOTAL MORBIDITY	PER CENT
Spontaneous	1,631	48	10	1	6	4	4	94	1 (Appendix)	168	10.3
Low forceps	1,029	34	17		14	3	3	65	1 (Anemia)	138	12.4
									1 (Tuberculosis)		
Midplane forceps	184	8	6	2	1	2	1	16	1 (Eclampsia)	37	20.1
Midplane forceps with Dührssen's incisions	32	7	3		1			3		14	43.7
Breech extraction or forceps on aftercoming head	75	3			1			9		13	17.3
Twins with interference	9	1						2		3	33.3
High forceps	10	3						3		6	60.0
High forceps with Dührssen's incisions	11	4	1					4		9	81.8
Version and extraction	5	1							1 (Tuberculosis)	2	40.0
Craniotomy	1							1		1	100.0
Total	2,987	109	37	3	23	9	8	197	5	391	13.1

Morbidity.—The factors responsible for morbidity in the total group of 2,987 are recorded in Table IV. The standard of morbidity used is that suggested by DeLee. Every patient with a temperature of 100° F. at any time throughout the hospital stay is considered morbid. The morbidity rate for the 2,987 patients is 13.1 per cent using this standard. If classified according to the Strassburg method (any patient having a temperature of 100.4° F. on two days of the second to tenth puerperal days inclusive), the morbidity rate is lowered to 6.7 per cent. In Table IV the causes of morbidity and their frequency in the various obstetric procedures employed in the group are summarized. It is to be noted that infection of the episiotomy wound, although relatively infrequent, forms the second largest group of specific causes of morbidity. It is exceeded in frequency only by upper genital tract infection.

Morbidity may be considered by other standards than temperature elevation. An increase in the average duration of hospitalization should be classed as evidence of morbidity. The usual duration of hospital stay for our patients is ten days. In the group of patients in whom an infected episiotomy was present the period of hospitalization was somewhat longer. The average duration in the cases repaired with the silkworm gut technique, in which infection of the wound developed, was 12.5 days. In the patients in whom infection was present in an episiotomy wound repaired with the catgut suture technique the average duration of hospitalization was prolonged to 15.3 days.

Mortality.—In the complete series of 5,624 delivered during the period of our study there were 12 deaths. This results in a mortality rate of 21.3 per 10,000 patients. Only three of these deaths occurred in the 2,987 patients upon whom episiotomy was performed. In these three instances there is no demonstrable relation between the episiotomy and the fatal termination. In one of the patients pregnancy was complicated by severe mitral cardiac disease. She was delivered at term by episiotomy and low forceps operation. Death occurred one and one-half hours postpartum of cardiac decompensation. In the second case delivery at term was accomplished also by episiotomy and low forceps application. Death occurred six days postpartum of agranulocytic angina. The episiotomy was repaired with catgut suture and it showed no evidence of infection. The third patient was delivered following episiotomy and midplane forceps application. She died sixty-one days postpartum of puerperal sepsis. The episiotomy was repaired with silkworm suture and was infected. The perineal infection appeared to be secondary to an intrauterine infection with a profuse lochial discharge from which hemolytic streptococci were cultured.

End-Results.—An attempt was made to determine the character of perineal support following episiotomy as evidenced by the condition at the time of examination at least six weeks postpartum. Information was available in the records of 62.1 per cent of the total group with a slightly higher incidence of follow-up in the silkworm gut repair group than in those repaired with catgut. Table II shows a classification of results in the two types of repair. It is to be noted that a poor result was recorded in 2.2 per cent of the silkworm repair group and in 1.1 per cent of the catgut suture repairs. No significant difference in the end-results of the two groups could be noted and generally satisfactory results were recorded. Occasional instances were recorded in both groups in which over-approximation of the incision had been produced. This error is a source of dyspareunia which may not be relieved until the vaginal opening is enlarged by superficial incision. It is to be differentiated from pain due to tenderness along the line of the episiotomy tear. Such tenderness may persist for several months and then gradually disappear.

SUMMARY

Two thousand nine hundred and eighty-seven consecutive episiotomies have been considered from the standpoint of immediate healing, coinci-

dent morbidity, incidence of infection, and end-results. We believe that a sufficiently large series has been summarized to eliminate the majority of errors which might be due to individual factors. The following conclusions are presented:

1. Infection of the episiotomy wound is a minor but significant cause of puerperal morbidity.

2. The incidence of infection is greater in those cases repaired with silkworm gut suture but the average infection in this group is less severe.

3. The incidence of infection in both types of repair increases rapidly with the complexity of associated obstetric procedures.

4. Morbidity and end results depend upon factors other than the type of suture material used in the repair.