PERINEAL INJURIES DURING PARTURITION, WITH A REPORT OF 336 CASES*

By James F. Carrell, M.D., Philadelphia, Pa.

(From the Department of Obstetrics of the Jefferson Medical College)

DURING pregnancy and labor both mother and child are exposed to certain hazards, many of which may be avoided or partly overcome by simple means or by timely operative procedures. It is only just to say that every woman has a right to hope for complete physical restoration after delivery and not to be handicapped by an uncorrected pelvic injury.

The soft structures of the pelvis of a patient confined for the first time are exposed to almost certain damage, even in normal or spontaneous delivery, but this is more likely in cases in which the attitude of the obstetrician is either one of passive, ineffective, or active meddlesome interference.

The anatomy of the lower birth canal is very complex, its injuries numerous, and the methods of repair diversified. Looney,[1] in his comprehensive paper on the anatomy of the female pelvic floor, for descriptive purposes, divided the diamond-shaped pelvic outlet by a transverse line passing between the ischial tuberosities. This line is found to pass directly over the central point of the perineum, which is midway between the posterior commissure of the vulva and the anal orifice. The triangle anterior to this dividing line is termed the urogenital triangle, because the external urinary meatus and the external genitals are found in this space, while the triangle posterior to this line is known as the anal triangle.

The urogenital triangle is covered with a thick fascial layer which includes Colles' fascia covering the superficial perineal muscles. Lying in the midline, and practically surrounding the vaginal orifice, is the bulbocavernosus muscle. Arising posteriorly from the central point of the perineum, where fibers are given off to the superficial transverse perinei muscles, and to the external sphincter of the anus, it passes anterior to either side of the vagina to be inserted into the sides and dorsal surface of the clitoris.

The superficial transverse perineal muscles are very thin strands of muscle fibers and of minor surgical importance.

Surrounding the anal orifice, and taking some of its fibers from the levator ani muscle, is the external sphincter muscle of the anus. This muscle has two attachments, the tip of the coccyx posteriorly and a

---

*Read before a meeting of the Obstetrical Society of Philadelphia, October 7, 1926.

blending with the other perineal muscles in the central part of the perineum anteriorly.

The perineal body, situated just anterior to the anus and posterior to the fourchette, is a most important obstetric and gynecologic part of the female pelvic anatomy. It is the point of insertion of all of the superficial perineal muscles, and some of the deeper muscles of the pelvis as well. The fascial layers blend at this point, and make it of musculofibrous consistency. It extends upwards as a wedge between the lower parts of the vagina and the rectum, where the latter turns backwards as the anal canal. It is about one and a quarter inches long from its base at the skin to its apex, the site where the walls of the vagina and rectum come in contact.

Situated beneath the superficial perineal muscles is the urogenital diaphragm, enclosing, between its two fascial layers, the sphincter muscle of the membranous urethra, anteriorly, and the deep transverse perinei muscles, posteriorly. Above this structure is found the pelvic diaphragm, composed of the levators ani and coccygei muscles, covered with their superior and inferior layers of fascia.

The origin and insertion of the two levator ani muscles are very complex. Their chief function is the support of the viscera of the pelvis minor. In front and below, they separate to allow the passage of the urethra, vagina, and anal canal. Each muscle has three points of origin: the anterior fibers from the posterior pubic surface, the posterior fibers from the spines of the ischium, and the large intermediate portions from the angle between the visceral and parietal layers of the pelvic fascia. The anterior fibers pass downward along the sides of the vagina and are inserted in the central point of the perineum and the anal canal, between the sphincter muscles. They also pass behind the anal canal and lower part of the rectum. Contraction of these fibers, it will be seen, will draw the anus, rectum and vagina forward. The intermediate fibers pass posteriorly to the lower end of the rectum, where they fuse with the fibers from the opposite side and are inserted into the rectum between the sphincters. The posterior fibers pass backward and are inserted behind the rectum and to the sides of the coccyx.

It is observed that all of these structures are so intimately related, there being a blending of fascial layers and muscle fibers at so many points, that an injury of any one group must inevitably have an ill effect on the entire system.

It is almost impossible for a normal fetal part to dilate these musculofibrous structures evenly, and be expelled through them without inflicting a varying degree of damage, either open or concealed.

A careful study of the pelvic anatomy reveals a construction of dual musculature; each muscle acting in opposition to its fellow, and

2. Abnormality in the mechanism of labor, such as improper flexion or extension of the presenting part.

3. Sudden and rapid expulsion of the fetus, especially following the administration of pituitrin.

4. A narrow pubic arch.

5. A rigid perineum, as found in old primiparae, mechanical interference, etc.

In a perusal of recent medical literature, a wide diversity of opinion is found regarding the value of perineotomy or episiotomy, the term first applied by Michaels in 1799; American and English textbooks on obstetrics hold it in little favor.

The usual indications for this damage-saving operation are: (1) A threatened rupture of the perineum, either open or concealed; (2) rigidity of the soft parts; (3) narrowness of the external genitalia; (4) faulty presentation; (5) a very large child, and (6) an indication for haste on the part of mother or child for rapid delivery.

Three points of incision are named: the bilateral as recommended by Scanzoni, the mediolateral or Tarnier method, and the median recommended by Kastner.

Bilateral incisions are rarely used. They have the disadvantage of being two in number and of dividing the labia at a point where repair is difficult and cicatrization conspicuous.

The median and mediolateral each have advantages and disadvantages. It matters little which incision the operator elects to use, provided he be thoroughly familiar with the anatomy and immediately after delivery closes the wound as carefully as he would an abdominal incision, remembering that divided muscles, unless carefully joined will never properly function and that the strength of all anatomic structures depends on its enveloping fascia.

The vaginal mucosa and the perineal skin provide but little support to the pelvic viscera, but should be joined in such a manner as to completely seal out all secretion which may accumulate upon their cut surface. The simple introduction of two or three nonabsorbable sutures, even though they pass to the very depth of the wound, can no longer be considered good surgery; any more than such suturing of an abdominal wound could be considered proper.

The closure of an episiotomy wound is quite simple when compared with the repair of a traumatic laceration, especially if the wound was compounded and has tributary lacerations running up into the sides of the vagina. Here, irregularly torn and retracted muscles must be dealt with, and unless parallel muscle bands, which have separated widely, are isolated and brought together in their usual position, the end-result will be disappointing.

It is our practice to use the median incision if episiotomy is indi-

cated. It is most often used in primiparae and in multiparae who have previously had extensive perineal repair. If a central incision, extending down to the superficial fibers of the anal sphincters, does not afford sufficient room to deliver the child, an oblique extension of this incision to either side of the rectum may be employed. The oblique part of this incision divides the posterior fibers of the levator ani muscle on the side on which it is extended and these must be carefully sutured as soon as delivery is completed.

These wounds are sutured with No. 2 or No. 3 twenty-day chromicized catgut. Each structure is united in the reverse order from that in which it is severed; that is, the muscle at the depth of the wound and at its upper end is sutured first. All sutures are interrupted, except those in the vaginal mucosa. All dead space is obliterated. The mucous membrane and skin are sutured in such a way as to make a water-tight coaptation and an effort is made to reconstruct the hymen, fourchette, and skin perineum along strict anatomic lines.

Traumatic lacerations are repaired exactly in the same manner.

Not all serious injuries of the pelvic floor are manifested by a superficial rent in the vaginal mucosa or even the structures immediately underneath. In many cases wide damage in the form of a separation of the levator ani muscle occurs without a frank laceration of the vaginal wall. Hence, in certain cases, a judiciously selected and properly performed perineotomy may avoid serious damage to the deep and more important pelvic structures.

Deutschman[5] believes the sutures should be introduced before a mediolateral incision is made and the perineum divided over the sutures if necessary. It is claimed that the exact anatomic structures and landmarks are thus preserved.

Whatever the technic may be, the perineal incision should be made for prophylactic purposes, and not as an emergency. It should be a method of choice, and not one of necessity. The incision should be under control and not allowed to be torn by the pressure of the presenting part, or by mechanical interference.

Open lacerations of the birth canal, while the usual injuries of parturition, are by no means the only injuries which may occur.

The late J. C. Hirst,[6] in a lengthy article, refers to injuries of the coccyx during labor, stating that these usually occur in primiparae with justo minor pelves and in whom, in all probability, the coccyx was injured in a previous accident, but who had the trouble aggravated by subsequent forceps delivery.

Riddle[7] of Sydney, Australia, reports a case of extensive sloughing of the soft parts, caused by prolonged birth pressure. The patient had been in labor for eight days prior to her admission to the hospital. A large caput was presenting at the vulva, which could not be pushed back. The head was perforated and crushed. With great difficulty, a large mutilated infant was delivered. The recovery of the patient was prolonged and stormy. She ran a temperature for forty-three days, at the end of which time there was found a rectovesicovaginal fistula. The bladder wall, in the region of the trigone and close to the ureteric orifices, was missing. The entire

cervix was absent. The opening in the rectum was extensive and part of the external sphincter muscle was gone. The size of the patient's pelvis was normal. The dystocia was thought to be due to over-size of the infant.

Shaw,[8] of Manchester, reports a case of extensive perineal hematoma during labor in a thirty-nine-year-old primigravida, associated with an albuminuria of mild degree. The effusion of blood in the perineum started with the onset of labor and independent of manipulation. In twelve hours the hematoma was so extensive that delivery by vagina was thought to be out of the question. For that reason she was delivered by section. A hematoma, the size of a tangerine orange, was found in the right broad ligament, and the effusion extended into the right side of the bladder. The patient died on the sixth day of what was thought to be a mesenteric thrombosis. Before death, the lower part of the vagina and rectum had started to slough. The hemorrhagic extravasation was attributed to toxemia.

TABLE I. LACERATIONS

	NONE	1ST DEGREE	2ND DEGREE	3RD DEGREE	ALL DEGREES	TOTAL
Primiparae	34 or 27%	43 or 35%	47 or 38%	1	91 or 73%	125
Multiparae	138 or 65%	53 or 25%	20 or 10%		73 or 35%	211
Total	172 or 51%	96 or 29%	67 or 20%	1	164 or 49%	336

In a study of 336 recent cases delivered at the Jefferson Hospital Maternity, out of which 125 were primiparae, there were 164 vaginal and perineal tears, ranging in degree from a slight mucous membrane abrasion to one severe laceration which involved the sphincter muscle and the rectum.

Of the 125 patients delivered for the first time, there were 34, or 27 per cent, who were free from lacerations; 43, or 35 per cent, who suffered first degree lacerations; 47, or 38 per cent, who suffered second degree lacerations, and it was in this group where a complete laceration occurred.

Included in this report there were 211 multiparous patients; 138, or 65 per cent, of which received no known injury to the pelvic soft structures; 53, or 25 per cent, received first degree lacerations, and 20, or 10 per cent, received second degree lacerations. There were no complete lacerations in this group.

Of the 125 primiparae, 91, or 73 per cent, received perineal lacerations of varying degrees, and of the 211 multiparae, 73, or 35 per cent, received lacerations of the perineum.

In this series there were 21 episiotomies performed, 17 on primiparae, and 4 on multiparae. All of these episiotomies are included in the above report as second degree injuries.

REFERENCES

(1) *Looney, W. W.:* Texas State Jour. Med., November, 1924, xx, 402-406. (2) *Tweedy, E. H.:* Practical Obstetrics, ed. 5, p. 99. (3) *Allen, R. E.:* Northwest Med., August, 1924, xxiii, 365-367. (4) *Potter, I. W.:* The Place of Version in Obstetrics, 1922. (5) *Deutchman, D.:* Med. Jour. and Record (Supp.), Nov. 9, 1924, cxx, 150-152. (6) *Hirst, J. C., and Wachs, C.:* AM. JOUR. OBST. AND GYNEC., February, 1924, vii, 199-205. (7) *Riddle, H. A.:* Med. Jour. Australia, Feb. 9, 1924, x, 142. (8) *Shaw, W. F.:* Jour. Obst. and Gynec. of the Brit. Emp.

332 SOUTH TWENTY-FIRST STREET.