Traction Suture of the Cervix: A Novel Procedure With Loop Electrosurgical Excision

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BACKGROUND: Loop electosurgical excision procedure (LEEP) of the transformation zone has become the preferred treatment of cervical intraepithelial neoplasia (CIN).

CASE: An inadvertent vesicovaginal laceration occurred during LEEP of CIN2 in a 57-year-old-woman with a cystocele. We developed a traction suture of the cervix that we used during LEEP that permits manipulation of the cervix outward, away from the nearby protruding tissues.

CONCLUSION: Traction suture during LEEP may reduce inadvertent lacerations in patients with cystocele, rectocele, and other protruding tissues. (Obstet Gynecol 2003;102: 1063–5. © 2003 by The American College of Obstetricians and Gynecologists.)

Loop electosurgical excision procedure (LEEP) of the transformation zone has become the preferred treatment of cervical intraepithelial neoplasia (CIN).[1] The technique is safe and efficient, it can be performed under local anesthesia, and patients can walk after the procedure. There is a choice of several sizes of the loop, thus enabling the surgeon to control the extent of the tissue removed.

However, in rare cases, the use of LEEP may be associated with complications. Because the patient is awake during the procedure, the heat of the loop might cause the patient to move despite the local anesthetic applied. This can lead to an inadvertent movement of the surgeon's hand, causing a laceration into the vaginal wall. We had such a case that resulted in a vesicovaginal laceration. This difficulty led us to develop a novel technique aimed at preventing similar complications.

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CASE

A 57-year-old multiparous woman was referred to the colposcopy unit for recurrent low-grade squamous intraepithelial lesions. A colposcopy-directed biopsy from a small aceto-white epithelium in the anterior cervical lip revealed CIN2. The gynecological examination revealed moderate, asymptomatic cystocele. The patient was advised to undergo a LEEP. Before initiation of the procedure, the patient emptied her bladder, and the LEEP was carried out by means of a specially designed insulated speculum hooked to a suction tubing and a lateral traction speculum. Under local anesthesia, a LEEP was performed with a 1.5 × 1.2 Valley-lab loop. During the procedure, the patient suddenly moved, and the loop accidentally came in contact with her cystocele, resulting in a stream of fluid entering the vagina. The suspicion of bladder laceration was confirmed by insertion of a Foley catheter and injection of diluted indigo-carmine dye, which was observed leaking from the anterior vaginal wall hole. Cystoscopy revealed a 4-mm hole in the interureteral ridge. Under general anesthesia, the laceration was repaired through the vagina with two layers of Vicryl 2-0, followed by an anterior vaginal repair. The bladder was drained through a Foley catheter for 5 days. After removing the catheter, the patient remained asymptomatic. The LEEP specimen showed CIN2–3. Five-year follow-up revealed no recurring CIN.

COMMENT

In this case, the bladder laceration occurred because a cystocele was present in close proximity to the exit route of the loop electrode. In addition, the laceration may have also occurred during the cervical excision maneuver because the cervix was short, the anterior fornix was nonexistent, and the cystocele covered the cervical anterior lip down to the os. Other possible contributing factors may have been a sudden move of the surgeon's hand or a movement of the patient, leading to contact between the hot loop electrode and the protruding soft vaginal tissue of the cystocele. Furthermore, in many cases, various malformations and deformities of the lower genital tract may be risk factors for lacerations of the vagina and adjacent organs.

This complication prompted the development of a preventive procedure. This consists of pulling the cervix

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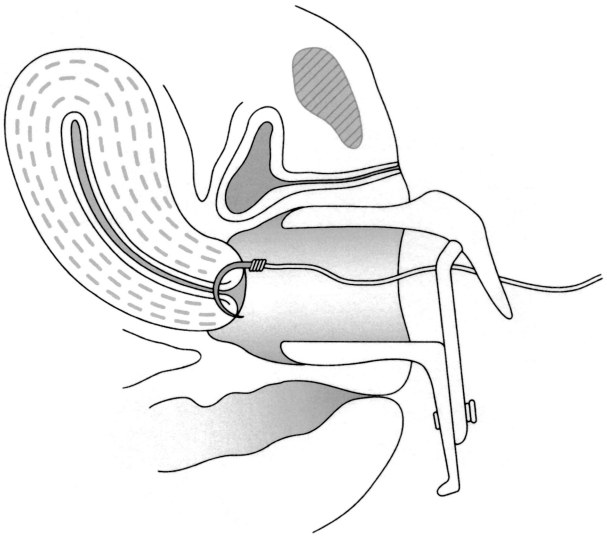

Figure 1. Introduction of traction suture through both anterior and posterior lips of the cervix.
Bornstein. Suture in LEEP. Obstet Gynecol 2003.

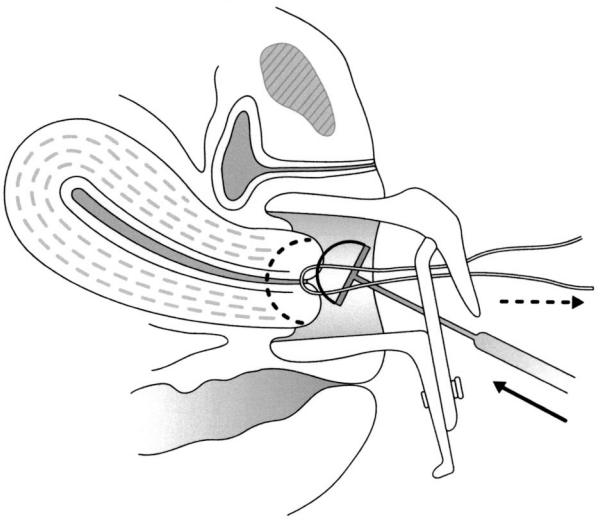

Figure 2. The suture threads are inserted through the loop. Then an outward traction of the suture threads (broken arrow) with simultaneous inward movement of the loop toward the cervix (solid arrow) enables displacing of the cervix away from the bladder and rectum.
Bornstein. Suture in LEEP. Obstet Gynecol 2003.

outward, away from the cystocele, enterocele, and other protruding vaginal tissues. A cervical tenaculum was not appropriate for that purpose because it limited the manipulation of the loop. Furthermore, the tenaculum is made of metal, which may be hazardous because a burn could result from contact with the loop while the current is on. In addition, the loop often tears when in contact with a metal object. We therefore used a 2-0 silk suture, inserting it through both lips of the cervix with a curved 26-mm needle (Figure 1). Placement of the needle in the cervix was performed after the local anesthesia. The "bite" of the suture in the cervix was 1 cm long; the needle was inserted 0.5 cm anterior to the cervical os and exited 0.5 cm posterior to the os. It was not tied. The threads were inserted into the loop hole and were stretched outward, which pulled the cervix (Figure 2). Then, preceding passage of the loop through the cervix, the suture threads were used to move the cervix backward, thus exposing the area where the loop electrode was about to enter the tissue. The cervix was then tilted forward by the threads, thus depicting the area where the loop was about to come out from the cervical tissue, ensuring that it would not come into contact with the nearby vaginal mucosa.

Publications regarding lacerations and fistulae of bladder and intestine were identified using MEDLINE and National Library of Medicine's PubMed. The searches were conducted for published literature between 1980 and May 2003 because the loop was introduced in the early 1980s. Keyword searches were performed using "loop excision" or "large loop excision" or "LLETZ" or "LEEP" or "conization" or "cervical intraepithelial neoplasia" combined with "fistula" or "laceration." There were no language restrictions. References from articles were manually screened for relevant citations. This MEDLINE search revealed a previous case report of a woman with bladder perforation[2] and two other patients with bowel damage from the use of LEEP to treat CIN.[3]

In one case, a 17-year-old woman with CIN3 underwent LEEP.[3] Bimanual examination revealed the uterus to be slightly deviated to the left. Although the procedure was performed under visualization of the cervix through the colposcope, a lacerated bowel protruded into the vagina. The use of a traction suture may have straightened the cervix, pulling it away from the surrounding vaginal mucosa and enabling a precise cut of the cervix. A case of rectovaginal fistula occurred in a 44-year-old multiparous woman with CIN3 and a small cervix.[3] The use of a traction suture may have made more room for the LEEP, thus preventing the thermal damage to the vaginal wall. A case report of a bladder fistula in a multiparous 40-year-old woman after LEEP was ascribed to use of a large loop.[2] Because the lesion measured 1.5 cm, the use of a traction suture may have allowed for the use of an adequately large loop to allow removal of the whole lesion.

Since we have introduced the traction suture into use in our clinic 5 years ago, we have used it in 98 (15%) of the 650 women who underwent LEEP with no cases of laceration of the bladder or rectum. Indications for the

placement of the traction suture are patients with vaginal wall prolapse and lateral malpositions of the uterus; patients who present for a repeat LEEP; and patients with a small, atrophic cervix flush with the vaginal vault.

The best method to avoid injury is to be vigilant about the potential for injury. Patients who are at risk for laceration because of distorted vaginal or cervical anatomy must be approached with appreciation of their increased risk for injury. In this context, the use of the traction suture seems useful in manipulating the cervix away from the vaginal wall. If the cervix cannot be manipulated safely with the traction suture, one should consider performing the procedure in the operating room under general anesthesia, where greater assistance and retractors would be available.

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