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Case Report

Thiersch Procedure for Rectal Prolapse: Experiences From a Single Institution

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The Thiersch procedure is a simple and safe surgical management option for rectal prolapse. Herein, experiences—the perioperative factor, functional outcome, recurrence, and complications—from a single institution are reported. Medical records were reviewed to identify patients diagnosed with rectal prolapse, and only patients who underwent the Thiersch procedure. The clinical presentations, perioperative findings, complications, recurrences, and long-term functional outcomes were collated. Twenty-four patients underwent the Thiersch procedure for rectal prolapse between 1995 and 2014. The mean operative time was 55.5 ± 25.6 minutes and postoperative wound pain was minor. The major complications were urine retention (29.2%) and wound infection (16.7%). All patients experienced symptom improvement after the operation and recovered their anal tone. Although the Thiersch procedure entails certain recurrence and infection rates, it provides improved functional outcomes and low perioperative risks.

Key words: Thiersch procedure – Rectal prolapse – Surgery

Rectal prolapse refers to the full-thickness protrusion of the rectum from the anus (Fig. 1). The incidence of rectal prolapse is approximately 2.5 per 100,000 persons.[1] Nygaard *et al* reported that rectal prolapse presented more frequently among the elderly and female populations.[2] The most common clinical presentations were anal pain and decreased quality of life, followed by rectal bleeding, fecal incontinence, and constipation.[3] Many surgical management options have been reported for rectal prolapse. However, a perioperative complication- and risk-free surgical management procedure is yet to be found. The Thiersch procedure is a simple and safe management option for highly comorbid patients. We report the outcomes of a series of Thiersch procedures performed in our institution and reviewed the related literature.

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Fig. 1 Rectal prolapse before operation.

Materials and methods

Medical records were reviewed to identify patients diagnosed with rectal prolapse, and only patients who underwent the Thiersch procedure (anal encirclement) were considered for this case series from 1995 to 2014. Before the operation, each patient was administered an enema for colon preparation. Two or 4 incisions were performed beside the anus, and after dissecting the subcutaneous tunnel, a silicon tube or mesh was inserted to encircle the anus. In addition to preoperative antibiotics, because of the foreign body implantation, all patients received postoperative antibiotics for at least 3 days. The clinical presentations, perioperative findings, complications, recurrences, and long-term functional outcomes were collated. The management of these complications and recurrences are reported herein.

Results

Twenty-four patients, 20 women and 4 men, underwent the Thiersch procedure for rectal prolapse between 1995 and 2014. The mean follow-up duration was 27.4 ± 40.1 months, and the patients' mean age was 74.4 ± 11 years. Among the 20 female patients, the mean number of childbirths was 3.8 ± 1.2. The clinical presentations included anal-lump-affected quality of life (17/24), constipation (8/24), anal bleeding (8/24), diarrhea (3/24), and pain (3/24) (Table 1). Physical examinations revealed that half the patients exhibited loose anal tone.

The American Society of Anesthesiologists' physical status classification of these patients was as follows: I (2/24), II (11/24), III (10/24), and IV (1/24). Twenty-three patients received spinal or epidural anesthesia; the one other patient received general anesthesia through an endotracheal tube. Perioperative blood loss was minimal. The mean operative time was 55.5 ± 25.6 minutes.

Table 1 Clinical presentations of rectal prolapse

Symptom	Number	Prevalence, %
Decreased quality of life	17/24	70.8
Constipation	8/24	33.3
Bleeding	8/24	33.3
Diarrhea	3/24	12.5
Pain	3/24	12.5

Postoperative wound pain was minor; 15 patients required only oral acetaminophen, and the remaining 6 patients received nonsteroidal anti-inflammatory drugs as an analgesic. Only 3 patients received opioid analgesics (morphine or pethidine) on postoperative day 1. The major complications were urine retention (7/24) and wound infection (4/24). Seven patients underwent urine catheter insertion; the catheter was removed before discharge. The 4 cases of wound infection were treated with antibiotics and wound care, without a second operation (Fig. 2). The wound healed eventually. One perioperative complication was reported: The rectal wall perforated at anterior side when dissecting the subcutaneous tunnel. This patient received direct repair and prolonged postoperative antibiotic treatment. No subsequent complications, such as wound infections or fistula, were reported. All complications are summarized in Table 2.

All patients experienced symptom improvement after the operation. However, most patients (19/24) initially required laxatives after the operation. The duration of postoperative hospital stays was 9 ± 4 days. Five recurrences were reported within a mean duration of 2 months (range: 1–5 months), and 4 of these cases were managed using abdominal surgery for recurrent rectal prolapse. Among the 4 patients, 3 received anterior resection and rectopexy, whereas the other received the Delorme procedure. The fifth patient underwent an operation at another institute. After the second operation, none reported recurrence during a mean follow-up duration of 17.8 months (range: 9–30 months).

Table 2 Thiersch procedure complications and management

Complication	Incidence, %	Management	Sequela
Urine retention	29.2	Temporary urine catheter	No
Wound infection	16.7	Prolong antibiotics	No
Rectum wall injury	4.2	Direct repair	No

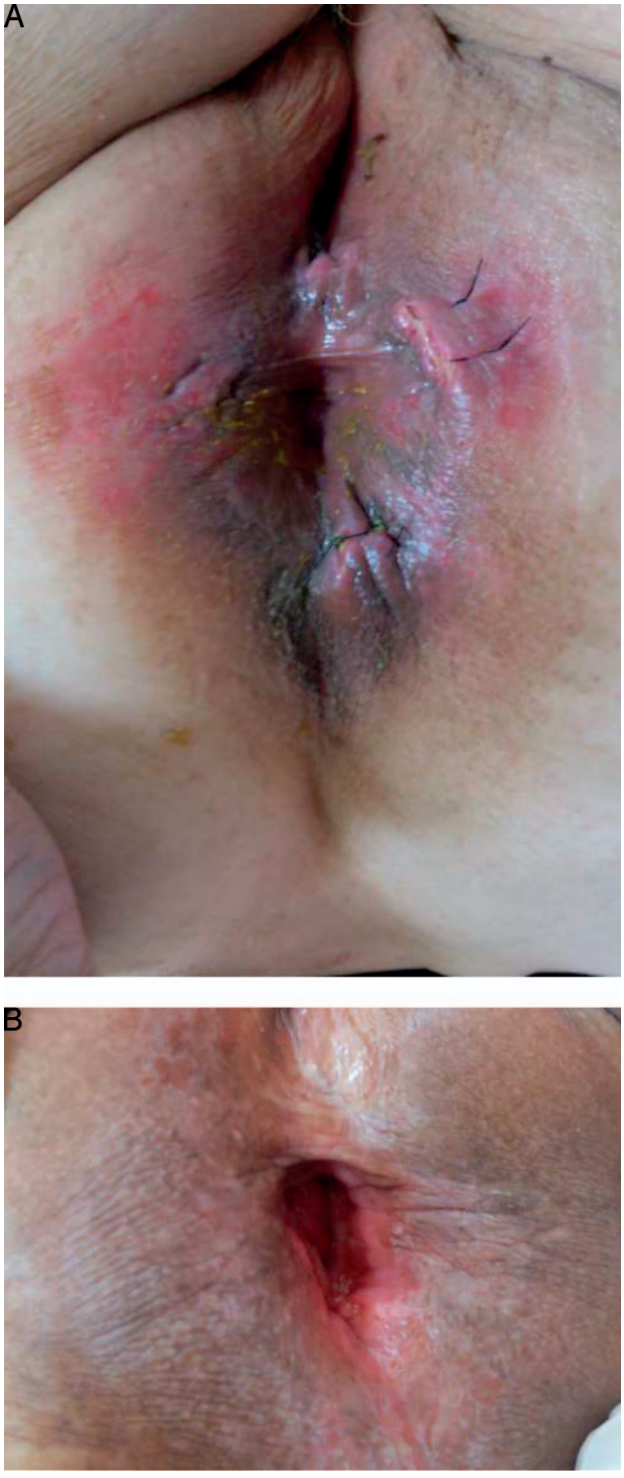

Fig. 2 (A) Postoperative wound infection. (B) Wound healed well after antibiotics and wound care.

Discussion

Rectal prolapse (rectal procidentia) is the full-thickness descent of the rectum through the anus. Predisposing factors include an old age and the female sex, increased intraabdominal pressure, intraluminal entities, trauma, colorectal inflammation, brain or spinal cord abnormality, mental illness, malnutrition, and infection.[4–6] In our series, the majority of patients were elderly women. Only 2 are <60 years: One patient is a 44-year-old man with a 10-year history of spinal cord trauma, and the other is a woman with major depression.

The clinical symptoms included pain, rectal bleeding, fecal incontinence, constipation, urinary incontinence, mucous diarrhea, and vaginal vault prolapse, so the quality of life decreased.[3] We found that patients seldom complained of pain in our series; they complained about the discomfort and the decreased quality of life. These differences may be attributable to individual tolerance to pain.

In 1891, Thiersch first reported on encircling and narrowing the anus by inserting a silver wire into the perianal space.[7] The Thiersch procedure is a simple and minimally invasive procedure that can be performed under local or regional anesthesia. Poole *et al* stated that the Thiersch procedure was adequate for high-risk patients.[8] In addition, it can be performed as a temporary procedure for unstable patients.[9] Unfortunately, the Thiersch procedure entails complications such as high recurrence rates, infections, tissue erosion, and fecal impaction.[10]

Literature review reveals that the recurrence rate is as high as 33%–44%.[11–13] Poole *et al* reported a recurrence rate of 20% in a 20-year case series; the recurrences were treated with a second Thiersch procedure.[8] In recent study, the recurrence rate decreased to 15%–22%. Baker reported his series with nylon for encircling and had 14 recurrence in total 6 patients in 1970. Sainio *et al* reported a recurrence rate of 15% (2/14), which they used mesh for encircling.[14] We obtained similar results; the recurrence rate in our series was 20.8% (5/24) with a mean recurrence duration of 2 months. The Thiersch procedure functions in 2 ways: In addition to mechanically narrowing the anus, proliferation of circumrectal connective tissue is the second factor. If a patient still has high intraabdominal pressure, early recurrence may occur before circumrectal tissue fibrosis. However, the anus cannot be encircled too tightly because it will lead to anal stenosis. We used our index finger

to sense and maintain the adequate anal tone and diameter during the procedure. In our series, 79.2% (19/24) of the patients experienced postoperative fecal impaction and required laxatives. This symptom persisted for months but improved gradually.

Because the Thiersch procedure entails using foreign bodies to encircle the anus, infections and foreign body erosion are critical complications. In addition to silver wires, stainless steel, monofilament nylon, Silastic, Dacron, silicon elastomers, and polypropylene wires have been used for encirclement.[10] We used silicon tubes or polypropylene meshes, and no foreign body erosion was reported. The wound infection rate was 16.7%, but infections required only prolonged antibiotic treatment until discharge. After adequate antibiotic treatment, the wounds healed well and no foreign body infection occurred. However, the wound infection considerably increased the hospital stay to 14 days. The mean hospital stay for noninfection cases was 8 days. Poole *et al* reported an infection rate of 20% in their series, and 13.3% (2/15) of patients underwent graft removal because of infections.[8] Tomoko Takahashi reviewed literature reported an infection rate about 11%–17%.[14] We recommend careful follow-up of the wound condition and prolonged antibiotic treatment if cellulitis occurs. Although the infection rate was as high as 16.7%, none of the patients required a second operation to remove foreign body. Infection control is crucial during the Thiersch procedure.

Except anal encirclement procedure, there are other methods: perineal resection, transabdominal rectopexy, transabdominal resection, and transabdominal mobilization of rectum. The advantage of perineal resection is spinal anesthesia compared with transabdominal approach. Tou *et al* found that there is no significant difference in function outcome, morbidity, and mortality between transabdominal approach and perineal approach group after systemic review.[17] But the complication of anastomosis, such as stenosis or breakout is possible. On the other hand, for resection versus no resection rectopexy, there is no statistically significant difference, too.[17] Therefore we do not favor transabdominal approach for the first treatment option in our hospital. Because transabdominal approach takes more risk for general anesthesia. We chose perineal approach for those low risk patients and Thiersch procedure for high risk patients. There are some combination surgeries to increase the success rate. Yoon proposed a combined Delorme–Thiersch procedure for rectal prolapse; this combined procedure had comparatively improved outcomes for high-risk patients in his series, and no recurrence was reported during a mean follow-up period of 22 months.[15] Gupta proposed another combined method: Thiersch's procedure and subanodermal coagulation. The recurrence rate is 7.9% (3/38) after 2 years follow-up.[16] Combination procedure maybe can yield a better outcome for those high-risk patients.

Conclusion

The Thiersch procedure is a simple and safe surgical management option for rectal prolapse in high-risk patients. However, it has certain recurrence and infection rates both in our series and in the literature. The management of recurrence involves a second Thiersch procedure or other rectal prolapse surgical management options. In addition, wound infection is a critical problem in Thiersch procedures. Wound infection requires prolonged antibiotic treatment, extends hospitalization, and perhaps necessitates a second procedure. Nevertheless, the Thiersch procedure results in adequate symptom improvement. We recommend the Thiersch procedure for high-risk patients.

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