

# Transsphincteric Approach to Large Rectal Villous Adenomas

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**Abstract objective** To evaluate the value and safety of transsphincteric approach for treating rectal villous adenomas. **Methods** From September 1994 to June 1999, the transsphincteric approach was performed on 15 patients with mid and low rectal villous adenomas. The mean distances of the lower and upper edge of lesions from anal verge were 4.4 cm (3.0~5.5 cm) and 7.9 cm (5.0~9.4 cm) respectively. The sizes of lesions ranged from 4 cm to 9 cm in largest diameter. Partial to total division of the anal sphincteric mechanism were performed intraoperatively. **Results** Fecal continences were preserved satisfactorily in all patients. There was no in-hospital death. Eight complications developed, three presacral infections, two anastomotic leakages in whom one healed spontaneously and one developed fistula after undergoing transverse colostomies, three patients experienced moderate perineal pain at sitting. At follow-up two patients had anastomotic recurrences. **Conclusions** Our results demonstrated that it is not harmful to divide the anal sphincteric mechanism with immediate reconstruction. The posterior transsphincteric incision provides maximal exposure for wide excision of the rectal villous adenomas and subsequent ultra-low anastomosis. The transsphincteric approach is an extremely valuable alternative technique for large villous adenomas of rectum and should be preferred over major surgery in selected patients.

**Key Words** rectum; villous adenomas; transsphincteric approach; surgery.

The treatment of rectal villous adenomas remains a difficult management problem especially for large lesions in the mid and low portions of rectum, which necessitates sphincter preservation.<sup>[1,2]</sup> The transsphincteric approach (Mason's operation) is an alternative procedure for these lesions which permits wide local excision and ultra-low rectal anastomosis.<sup>[3]</sup> This operation is a posterior approach to the rectum, after removing the coccyx and terminal sacrum, the anal sphincteric mechanism (levator ani muscles, internal and external sphincters) undergoes a partial to total division, so that the distal two-thirds of the rectum and anal canal can be well exposed, the subsequent excision of lesion and ultra-low rectal anastomosis can be performed in a very precise and easy manner under direct vision.

Though the transsphincteric approach is a unique alternative anus-preserving operation, most surgeons are not familiar with this operation due to its rare

indications nowadays. In addition, the intraoperative division of the anal sphincteric mechanism also causes fears of resulting incontinence. This paper reports our experiences about the transsphincteric approach.

## MATERIALS AND METHODS

### Patients

From September 1994 to June 1999, a total of fifteen patients (9 males, 6 females, mean age 53 years old, ranged 47~64) with mid and low rectal villous adenomas underwent transsphincteric resection at our department performed by a single surgical team. Partial to total division of the anal sphincteric mechanism were performed according to the locations of lesions. All patients had normal sphincter tone in rest and during squeezing, as evaluated by preoperative digital examination. The mean distances of the lower and upper edge of lesions from anal verge were 4.4cm (3.0~5.5 cm) and 7.9 cm (5.0~9.4 cm) respectively. The sizes of lesions ranged from 4 cm to 9 cm in largest diameter. The diagnosis were all confirmed by histology, among them eleven were colonoscopic biopsy, two were sigmoidoscopic biopsy, and two were surgical

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biopsy. Criteria for patient selection who were suitable for transsphincteric approach were based on clinical judgment, that is, large lesions more than 4 cm in diameter, occupying more than one-third of rectal circumference or its upper edge exceeding 6 cm from the anal verge.

Follow-up was done at one-month intervals for the first half a year and three monthly thereafter. Sphincter function was studied by history taking and rectal digital examination to evaluate sphincter tone both in rest and squeezing.

### **Operative technique**

The bowel was strictly prepared as for major rectal surgery, including whole gut lavage, the oral intake of antibiotics for three days and systemic antibiotic cover half an hour before the operation. A catheter was put into bladder routinely in order to facilitate identification of the urethra. After the induction of epidural or general anesthesia, the patient was placed in the left lateral decubitus position with the right hip and knee flexed. The Buttocks were taped and retracted laterally. A midline incision was made from just above the anus to the middle of the sacrum. The gluteus maximus was divided off its sacral origin bilaterally, the anococcygeal ligament was divided and the coccyx and lower one or two sacral segments were removed. The levator ani muscles and part of the external anal sphincter were divided. The edges of these muscles were tagged with matching sutures. The Waldeyer's fascia was opened to expose the rectum. The rectum was circumferentially mobilized by freeing it from the vagina in the woman and from prostate and seminal vesicles in the man. Care must be taken not to damage the urethra. The upper dissection level could reach peritoneal reflection. The proximal and distal rectum were transected at the apparently uninvolved bowel wall with at least 0.5 (0.5~2) cm margin from the lesion. If necessary the lower resection margin can be as low as the dentate line and the whole anal sphincteric mechanism can be split posteriorly (one case in our group, only the lowest portion of anal skin and subcutaneous

tissue remain intact). After copious irrigation of the surgical field, the proximal end of the rectum was pulled down and the end-to-end rectal-rectal or rectal-anal anastomosis was performed under direct vision by using two layer interrupted sutures. Then the operating field was washed with saline again. Great care was taken to repair levator ani muscles, internal and external anal sphincters. The previously placed matching sutures were used as markers to insure accurate approximation of specific sphincter components. A rubber drain was left in the presacral space for five to ten days. The subcutaneous tissue and skin were closed with interrupted sutures. No protective colostomy or ileostomy was performed. Stool softeners were given for 7~14 days.

### **RESULTS**

There were no postoperative deaths. The mean operating time and hospital stay were 172 (ranging: 130~245) minutes and 26.5 (ranging 18~55) days. Follow-up time varied from 8 to 72 (mean 31.6) months. Postoperative complications are presented in table 1, three patients with presacral space infection were treated successfully with antibiotic irrigation (injection of gentamycin or metronidazole) through the drains; two patients presented with fecal contents from the drain were diagnosed as anastomotic leakage, after undergoing transverse colostomies, one healed spontaneously and one formed fistula. The colostomies were closed three months later. Three patients complained of moderate perineal pain while sitting on hard chairs, but it gradually improved within six months.

The anal continences were preserved satisfactorily for solid and fluid feces in all 15 patients. The number of bowel movements in the early postoperative period was usually three to ten times daily. The patients had poor control of watery stool and urgent defecation in the early postoperative period, but it improved over time. Within six months, bowel movements reduced to one to five times daily. No fecal incontinence or rectal stenosis occurred.

**Table 1** Complications after transsphincteric approach to rectal villous adenomas

	Number	Treatment	Results
Anastomotic leakage	2	Transverse colostomy	One healed, one fistula
Presacral infection	3	Antibiotic irrigation through the drain	Cured
Perineal pain	3	None	Disappeared in six months

**Table 2** Postoperative pathology and complementary treatment results

	Number patients	Adjuvant therapy	Recurrence	Further treatment
Villous adenomas without cancer	11	None	2	Transanal local excision
Cancer Confined to mucosa	2	None	0	none
Cancer Infiltrating into Submucosa	2	Radiation	0	none

Postoperative histopathology revealed four villous adenomas with carcinoma, two were confined to the mucosa to whom no further treatment was given, another two patients with tumor infiltrating into the layer of submucosa refused to be operated again, so adjuvant radiation therapy were given and no recurrence was found so far. Two patients with villous adenomas had anastomotic recurrences both at the sixth month follow-up endoscopic study and were given transanal resection (table 2).

## DISCUSSION

Rectal villous adenomas are considered as precancerous lesion with relatively frequent association of carcinoma in about 30% of cases. It usually presents as large sessile, carpet-like lesion or even occupying the whole rectal circumference. The common treatment options include anterior resection<sup>[1,4]</sup> and various types of transanal resections<sup>[5-8]</sup>, etc. But each operation has its own defects. Anterior resection is not an ideal technique due to either massive trauma or inadequate removal of lesion. Some male patients may even sacrifice their anus because of the failure of anastomosis. Transanal resection is performed in a tiny anal canal, due to poor exposure, it is extremely difficult to remove the large, high-lying villous adenomas. The chance of incomplete resection and postoperative complications are not uncommon. The distorted specimen also causes difficulty in histological staging of the lesion. Recently reported transanal endoscopic surgery seems to be a good alternative to benign rectal lesions, but this technique is not yet general established because of the necessary special instrumentation and tools, the unusual technical aspects of the approach, and the stringent patient selection criteria, more experiences need to be accumulated.<sup>[9,10]</sup> In comparison, transsphincteric approach provides excellent surgical exposure and allows extremely accurate excision with safe margins.<sup>[11]</sup> The technique can be mastered easily and the postoperative complications are acceptable. But due to their malignant potential of villous adenomas, careful evaluation of resected

specimen and pathological examination both intra- and postoperatively are of critical importance. If the cancer penetrates beyond muscularis propria, further treatment is warranted. Either adjuvant radiotherapy or complementary radical surgery should be considered.<sup>[12]</sup> In order to have an accurate preoperative diagnosis so as to choose a proper operation, transrectal ultrasound in conjunction with biopsy has been reported of certain value in the literature.<sup>[13,14]</sup> The periodic Follow-up which include digital examination and colonoscopy is also mandated to find early recurrence.

The problem of the transsphincteric approach is the severe contamination of surgical wound which is main cause of infection. Three presacral space infections (20%) occurred in our group. The anastomotic leakage rate of the transsphincteric approach is reported around 12%,<sup>[15,16]</sup> while in our group it is 13.3%. Sufficient drainage of presacral space and a tension-free anastomosis are effective means to prevent these complications. A protective colostomy may be of value in preventing leakage, but our patient commonly feared of second operation, so this policy was not adopted in the clinical practice. Some patients also complained of moderate perineal pain while sitting during the early recovery months, this may be related to the removal of the coccyx, terminal sacrum and the irregularity of the remaining sacral surface. Fortunately this pain usually improved with time.

The advantage of the transsphincteric approach is that no matter how low the anastomosis is, it can still be accomplished easily. This procedure is particularly useful in dealing with lesions that are too high to be approached through the perineum and too low to be reached through the abdomen.<sup>[17]</sup> The transsphincteric resection is different from another posterior approach called Karaske's operation which does not divide the anal sphincteric mechanism, only longitudinally divide levator ani muscles, so the exposure of the lower rectum is poor and the extent of excision is greatly limited.

The division of the anal sphincteric mechanism is indispensable part of transsphincteric approach.

There was no severe anal malfunction in our group, even for case with total division of puborectal muscle, internal and external sphincters. This operation also provides us a chance to understand the anal sphincteric mechanism. The traditional concept was that "the anal sphincteric mechanism can not be divided, otherwise it will lead to fecal incontinence", but Pena<sup>[18]</sup> reported his dog experimental results showing that "the division of sphincters posterior and anterior to the rectum proved to be an innocuous maneuver" as long as a meticulous reconstruction was carried out immediately. Mason et al.<sup>[3,12]</sup> reported a large series of patients who underwent partial to total division of the sphincteric mechanism, all patients had good bowel control postoperatively, no fecal incontinence occurred in his series. Qiu et al.<sup>[19]</sup> and our group showed similar results. Christiansen et al.<sup>[20]</sup> reported using the transsphincteric approach to treat recurrent high anal fistula, only three of fourteen patients suffered from minor anal incontinence. To ensure good postoperative anal function, most authors emphasize the importance of keeping division sharply, strictly at midline, marking of the incised muscle edge with sutures and the delicate re-approximating of the divided anal sphincters.

The indications of the transsphincteric approach are rare nowadays, but for a few highly selected large, high-lying villous adenomas of rectum and possible other benign rectal lesions, this technique makes wide local resection and anus preserving possible who otherwise would have been treated by major surgery such as abdominoperineal resection or low anterior resection. The transsphincteric approach should be familiar to colorectal surgeons.

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