Palliative treatment of rectal carcinoma using a urologic resectoscope

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**SUMMARY**

**Objective** — The aim of this study was to report our experience with endoscopic transanal resection (ETAR) using a urologic resectoscope for palliative treatment of rectal carcinoma.

**Methods** — Outcome in patients who underwent ETAR with a urologic resectoscope between October 1992 and March 1999 are reported.

**Results** — The 60 ETAR procedures were performed in 37 patients (19 men and 18 women, median age 82 years). Morbidity was 10% (6 patients) and mortality was 2.7% (1 patient). Median hospital stay for the procedure was 5 days. Symptom control was achieved in 86% of the patients (40% partial control, 46% complete control). Colostomy was performed in 8 patients 7 months after ETAR. At study end, 4 patients were alive. Median survival was 14 months (range 0-62). The 1-, 2-, and 5-year survival rates were 54, 32 and 5%, respectively.

**Conclusion** — ETAR is a simple, minimally invasive and economical method for palliative treatment of patients with rectal carcinoma. ETAR is a useful addition to the surgeon’s armamentarium.

Key words: Rectal carcinoma. Palliative treatment. Endoscopy. Urologic resectoscope.

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**Material and methods**

All patients who underwent at least one palliative ETAR procedure between October 1992 and March 1999 were included in the study.

Indications for ETAR were invalidating manifestations related to the rectal tumor and contraindication for surgical resection, either because of the unresectable nature of the tumor or due to unresectable metastasis, or because of an unacceptable anesthetic risk (high American Society of Anesthesiologists - ASA score).

The operative technique was the same as used for transurethral prostate or bladder resection. We used an Iglesias two-way resectoscope with a 27 Fr operating channel for the 30° oblique optic and the section (loops) or coagulation (loops or balls) electrode activated by monopolar current delivered by a galvanic cauter. A 1.5% glycolic solution was used for continuous irrigation with controlled infusion pressure and continuous aspiration. The patient was hospitalized the day before the procedure. The rectum was prepared with an evacuating enema. All patients were given antibiotic prophylaxis (amoxicillin, clavulanic acid and amicizadole), which was continued for 48 h in case of superficial resection (not reaching the perirectal fat) and 5 days in case of deeper resection. The procedure was conducted under general anesthesia with tracheal intubation or spinal anesthesia. The patient was placed in the gynecology position; the perineal was prepared with povidone-iodine. We employed single-use sterile drapes adapted for endoscopic resection.

After digital examination of the rectum to evaluate local tumor extension and guide the resection, the resectoscope was introduced with its guide into the rectum. We did not use anal cerclage. Sphincter tone is required to allow adequate irrigation. The rectosigmoid could be explored proximally to 25 cm. The resectoscope was advanced beyond the identified tumor to healthy tissue. Resection began at the proximal and posterior portion of the tumor, working from the mucosa to the circular muscle fibers, or even the perirectal fat if the tumor was infiltrating and low situated tumors. There was no risk of intraperitoneal extension.

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perforation as long as the resection remained below the peritoneal reflection (figure 1). Once the rectal lumen had been cleared, hemostasis was achieved with a coagulation loop or ball. Resection debris were eliminated with the irrigation fluid and recovered for pathology examination. Debris remaining in the rectum were not recovered. Hemostatic cellulose-oxidized swabs were left in the rectum and eliminated at the first bowel movement.

Oral food intake was resumed the evening of the procedure for patients who had spinal anesthesia and the next morning for those who had general anesthesia. All patients attended follow-up visits for a physical examination at one month, then every three months. Digital examination of the rectum and rectoscopy were performed at each visit. Rectosigmoidoscopy was performed every 3 months for tumors situated high in the rectum.

Results

Thirty-seven patients (19 men and 18 women) underwent at least 1 ETAR procedure between October 1992 and March 1999. Median age was 82 years (range, 55-95). During this period, curative surgical resection of rectal adenocarcinoma was performed in 206 patients. All patients had invalidating tumor-related manifestations (tenesmus, hematochezia, obstruction, anal incontinence or pain). The preoperative ASA score was 2, 3, and 4 in 9, 13, and 15 patients, respectively. Contraindications for curative surgery in 37 patients who underwent endoscopic transanal resection with a urologic resectoscope for palliative treatment of rectal carcinoma, were calculated for 1, 2 and 3 year survival.

Patients, the median duration of the procedure was 50 min (range, 15-120). The median weight of the resected and recovered tumor was 38 g (range, 15-50 g). Estimated blood loss was greater than 200 ml for 6 ETAR. Median fall in serum hemoglobin was 0.6 g/dl (range, 0.2-4) during the 24 hours after the procedure. There were no clinical signs suggestive of irrigation fluid resorption. Serum sodium, creatinine, potassium and hematocrit were measured immediately after the procedure and the next day and did not show any sign of hemodilution. Bowel movements were resumed within one day (range, 1-3 days). Median hospital stay was 5 days (range, 3-15).

The morbidity was 10% (n = 6). Three patients developed postoperative hemorrhage requiring transfusion with packed red cells; one of these patients required revision 3 hours after the procedure for additional hemostasis. Acute urinary retention was observed in one 86-year-old man. Sural thrombophlebitis occurred on day 10 in one 57-year-old man. Finally, the resectoscope broke through the wall of the upper rectum in one patient requiring conversion to colostomy. Postoperative fever (38.5°C) lasting 48 hours (no germ isolated at blood culture) was observed in 13 patients (22%).

The peri-operative mortality was 2.7%. One patient died 12 hours after the procedure subsequent to a cardiac rhythm disorder.

Improvement in clinical symptoms was observed in 40% of patients. Complete regression was achieved in 46% (table III). Digestive tract continuity was preserved in 29 patients (78%). One patient had concomitant colostomy due to disruption of the upper wall of the rectum during the ETAR. Two patients had colostomies due to persistent invalidating incontinence. Five other patients also had colostomies due to recurrent stenosis leading to sub-occlusion. These eight colostomies were performed a median of 7 months (range, 0-12 months) after the first ERAR and after a median of 2 procedures (range, 1-3).

Thirty-three patients died. Median survival for all causes of death was 14 months (range, 0-62). The 1, 2, and 5-year survival rates were 54%, 31.6% and 5%, respectively (figure 2).

Discussion

Rectal resection remains the palliative treatment of choice for rectal tumors; mean survival is slightly greater than 1 year [2].

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**Table I.** Contraindications for curative surgery in 37 patients who underwent endoscopic transanal resection with a urologic resectoscope for palliative treatment of rectal carcinoma.

<table>
<thead>
<tr>
<th>Contraindication</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-resectable liver metastasis</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Age &gt; 85 and ASA score 3</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Unresectable tumor</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>ASA score 4</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>Abdominoperineal resection declined</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

**Table II.** Characteristic features of the tumors resected in 37 patients who underwent endoscopic transanal resection with a urologic resectoscope for palliative treatment of rectal carcinoma.

<table>
<thead>
<tr>
<th>Distance from anal margin (cm)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-5</td>
<td>28</td>
<td>76</td>
</tr>
<tr>
<td>6-10</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>11-15</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tumor size (cm)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>19</td>
<td>51</td>
</tr>
<tr>
<td>6-10</td>
<td>16</td>
<td>43</td>
</tr>
<tr>
<td>&gt; 10</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quadrants invaded</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>18</td>
</tr>
</tbody>
</table>

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**Fig. 1** — The resectoscope in position. The peritoneal reflections are indicated by the bold line.
Unresectable tumors at diagnosis can be treated by external beam radiotherapy, or combination radiotherapy-chemotherapy allowing subsequent curative surgery in some patients [2, 17]. But operative mortality can reach 21% in patients over 70 years of age and 38% in those over 80 [8]. As the principal goal of palliative care is to improve quality of life in these elderly patients [17], local treatments and external radiotherapy are generally preferred over palliative resection, particularly when a colostomy is required.

ETAR is a simple technique that has been used for more than 15 years by general surgeons experienced with transurethral prostate resection [14, 16]. This method provides a good view of the rectal lumen and allows maximal resection under direct visual control. Elective hemostasis can be achieved with the coagulation loop and is facilitated by the low irrigation pressure. The circular smooth muscle fibers and perirectal fat can be easily recognized to control the depth of the resection.

Intraperitoneal perforation has been described during palliative ETAR [13, 14]. The risk is high for infiltrating tumors that cause anatomic modifications and for tumors situated high in the rectum, especially tumors situated anteriorly in women. The anterior peritoneal reflection lies 8-9 cm from the anal margin in men and 5-8 cm in women [18]. Beyond this distance, the colon is mobile making it difficult to control the depth of the resection. Certain authors propose limiting the resection to the posterior wall in such cases [12].

The risk of metabolic complications, resulting from absorption of the irrigation fluid, have been described in transurethral resection of the prostate [19] but not in ETAR [12, 15, 16]. The peroperative fall in serum sodium is correlated with irrigation fluid absorption [19] but remains limited, both in our experience and in the study reported by Ottery et al. [12]. The low intrarectal pressure induced by the irrigation fluid and the minimal vascularization of rectal tumors could explain the absence of metabolic complications.

Peroperative antibiotic prophylaxis continued for five days in case of deep subperitoneal resection, and correct bowel preparation (evacuating enema) are essential due to the risk of perineal abscess and septicemia [14, 16]. Postoperative fever was observed in 13 of the 60 ETAR (22%) in this series and could be related to bacteriemia even though the blood cultures were sterile, or to release of pyrogens during electroseuction of the tumor.

ETAR is best performed under spinal anesthesia. This type of anesthesia reduces the amount of peroperative bleeding and favors detection of excessive irrigation fluid absorption. ETAR can also be performed with simple neuroleptanalgesia [13, 16].

Our study confirmed the results reported in earlier series [12-15]. Operative mortality is less than 3% [14], but can reach 11% early in the learning curve [20]. It is mainly related to infectious complications or tumor extension. Operative morbidity varies from 7 to 19%. Local symptom control is achieved in 77 to 95% of the cases. Efficacy is very good for rectal bleeding and functional disorders. Repeated ETAR procedures every three months are needed to control obstructive circumferencial tumors. Definitive colostomy may be useful, depending on the patient’s life expectancy. Tenesmus subsequent to rectal obstruction is generally relieved, but ETAR has no effect on pain due to pelvic infiltration reaching the sacral roots. Due to the risk of anal incontinence after sphincter destruction, very low situated tumors and not a good indication for this technique. Median survival is low, from eight to ten months, but some patients survive 5 years [14].

Palliative endoscopic NdYAG laser requires repeated sessions every 4 to 6 weeks in appropriately equipped centers. Results are poor for circumferencial tumors or those causing complete or partial obstruction [3]. ETAR was effective in 17 patients with circumferencial tumors in our study. NdYAG laser is especially interesting for small tumors and for tumors situated more than 15 cm from the anal margin. External radiotherapy is less effective for obstruction and morbidity is high (39%) with the risk of radiation-induced rectitis, hydric diarrhea, or rectovaginal fistulization and stenosis if the dose is high. This method is however indispensable for pain relief when infiltrating tumors reach the sacral roots [7]. In addition, it can limit the number of sessions required for local treatment and improve the results obtained, as has been demonstrated with palliative treatment with NdYAG laser [4]. Electrocoagulation is only possible for small tumors and offers limited visibility. The depth of the resection cannot be controlled and morbidity and mortality are comparable with local treatments [6]. Endoscopic transanal microsurgery requires specialized equipment measuring 40 mm in diameter and is a complex procedure. It is of limited use for low situated or circumferencial tumors where the insufflation cannot be maintained [5]. The sphincter has to be dilated because of the volume of the operating rectoscope, although secondary functional disorders related to sphincter dilatation are minimal and reversible [21, 22]. Some authors [9, 23-25] have reported the use of self-expanding metal stents inserted transanally for palliation. The failure rate has been high, ranging from 6 to 36% [23, 24], mostly because the stenosis could not be crossed. Stent obstruction subsequent to tumor ingrowth has varied from 20 to 28% [23, 24] despite controlled tumor progression with repeated NdYAG laser sessions. This therapeutic alternative does however appear to be rather attractive despite the high cost; results will undoubtedly be optimized with further progress in stent design.
In conclusion, ETAR is a simple, economical, minimally invasive technique, which is easily learned by surgeons experienced with the urologic endoscope. The procedure is well tolerated, even by patients in poor general health. It allows local control of unresectable rectal tumors and is an important part of our therapeutic arsenal for palliation in patients with rectal tumors. The best indication is a large partially obstructive tumor in the mid rectum. Endoscopic laser treatment for small tumors and proximal tumors, colostomy for recurrent obstruction and incontinence, and external beam radiotherapy for extraluminal control, particularly in cases of pain due to infiltration, are other therapeutic options to be chosen in a pluridisciplinary approach to patient care.

RÉFÉRENCES