ORIGINAL RESEARCH

SURGICAL TREATMENT OF ANAL STENOSIS: ASSESSMENT OF 77 ANOPLASTIES

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PURPOSE: Anal stenosis is a rare, incapacitating, and challenging condition, occurring mainly after hemorrhoidectomy, for which several surgical techniques have been devised. The purpose of this study was to describe early and late (1 year) results of 77 anoplasty operations performed in the Colorectal Unit of our institution.

METHODS: From 1977 to 2002, 77 patients with moderate to severe anal stenosis underwent surgery using two sliding graft techniques: 58 underwent Sarner’s operation and 19 underwent Musiari’s technique. Bilateral flaps were used in 7 patients.

RESULTS: Early morbidity was due to pruritus occurring in 2 patients, urinary infection in 1, and temporary incontinence in 1 patient. One patient needed early reoperation following suture line dehiscence. Late results (1 year) were classified as good in 67 cases (87%). There was no reoperation due to recurrence of stenosis.

Conclusion: The ease of performance, good functional results, and lack of severe complications show that Sarner’s and Musiari’s flap advancement techniques are effective and safe methods for surgical correction of anal stenosis, particularly when cutaneous fibrosis plays a major role in its etiology.

There were 49 women and 28 men ranging in age from 25 to 83 (mean age, 44).

In all patients, digital examination was not possible. Fifty-nine (77%) complained of obstructive defecation, 53 (69%) of painful evacuation, and 18 (23%) of frequent episodes of bleeding during defecation.

Hemorrhoidectomy was the most common cause for the stenosis (Table 1). The time elapsed from hemorrhoidectomy to anoplasty varied from 2 months to 15 years. None of the patients who had a previous hemorrhoidectomy had undergone that surgery at our institution.

Table 1 - Etiology of Anal Stenosis.

<table>
<thead>
<tr>
<th>Causes</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemorrhoidectomy</td>
<td>63</td>
</tr>
<tr>
<td>Laxative abuse</td>
<td>6</td>
</tr>
<tr>
<td>Fissurectomy</td>
<td>3</td>
</tr>
<tr>
<td>Fistulectomy</td>
<td>2</td>
</tr>
<tr>
<td>Excision and electrocoagulation of condyloma</td>
<td>1</td>
</tr>
<tr>
<td>Correction of congenital malformation</td>
<td>1</td>
</tr>
<tr>
<td>Debridement after Fournier’s gangrene</td>
<td>1</td>
</tr>
</tbody>
</table>

The night before surgery, all patients had a cleansing enema. A complete proctologic examination was carried out soon after anesthesia was administered, when possible. All patients underwent surgery in the lithotomy position under regional anesthesia. Antibiotic prophylaxis was routinely used (chloramphenicol or cefoxitin) for a 24-hour period.

The operation was initiated by the evaluation and excision of the distal transitional zone and anal scars with underlying partial internal sphincterotomy, the extent of which varied according to the longitudinal length of the scar. A rectangular flap was then planned. Its cranial margin was at the scar excision. The flap was at least 1 cm wide, and its length did not measure more than 3 times the width to prevent necrosis. The flap was then mobilized to replace the lining at the original scar location. Its cranial border was sutured without tension to the distal rectal mucosa margin. Hemostasis was carefully attended to. At the surgeon’s choice, lateral margins were sutured or not and the caudal margin of the flap was incised (Sarner’s technique — Figure 1) or not (Musiari’s technique — Figure 2). In cases in which the skin flap was not tension-free while the surgeon tried to perform Musiari’s technique, it was converted to Sarner’s technique to avoid flap dehiscence and contracture. Estimates of blood supply and degree of tension in the flap were the main determinants of these suturing options.

Sarner’s anoplasty was performed in 58 patients, and Musiari’s technique was used in 19. Depending upon the degree of anal opening after the mobilization and fixation of the first flap, a second contralateral flap (sagittal or coronal) was sometimes used. Bilateral flaps were used in 7 patients who underwent Sarner’s operation.

Patients were discharged 48 hours after the procedure. A high-fiber diet combined with bulk laxatives was recommended.

After discharge, all patients were evaluated on a weekly basis until complete operative wound closure was obtained. All patients were seen after 6 months and after 1 year. Immediate postoperative pain was minimal in the majority of patients.

Results were considered good (successful outcome) when spontaneous evacuation following high-fiber meals or bulk laxatives was observed. Results were considered unsatisfactory (unsuccessful outcome) when patients reported frequent painful evacuation for whom oral osmotic laxatives, suppositories, or enema administration were required and for those who required a late reoperation.

RESULTS

Temporary incontinence with gas and liquid stool lasting up to 3 months was observed in 1 patient. Urinary infection was observed in another. Moderate pruritus that subsided after 3 weeks was observed in 2 patients. Suture flap

Figure 1 - Sarner’s anoplasty. After dissection of a rectangular cutaneous flap, its distal border is incised and the proximal border is sutured to the fibrotic tissue resection line.

Figure 2 - Musiari’s anoplasty. After an incision made in the fibrotic area, a rectangular flap is created and suturing to the line of resection is performed without tension.
dehiscence with ischemic contracture was observed in 1 patient who received a Sarner’s flap. This patient underwent early reoperation. Excision of the ischemic border and new suturing of the flap was performed.

The mean time until complete wound healing was 4 weeks, varying from 3 to 6 weeks. Complete wound closure was observed in all patients.

Results were considered good when spontaneous evacuation following high-fiber meals or bulk laxatives was observed. In this consecutive series, good results were observed in 51 (88%) patients after Sarner’s operation and in 16 (84%) patients after Musiari’s operation, an overall 87% success rate (Table 2). Seven patients in the Sarner’s operation group and 3 in the Musiari’s group were included in the unsuccessful outcome group.

DISCUSSION

Anal stenosis, although rare, is one of the most feared and disabling complications of anorectal surgery. Most cases of mild to moderate narrowing can be managed conservatively. Nevertheless, when conservative treatment is not effective in facilitating evacuation and reducing pain, surgical treatment is warranted.

A number of corrective surgical procedures have been designed aiming to bring a healthy lining to the narrowed portion of the anal canal\textsuperscript{4-21} (Table 3). Since more complex techniques (such as S-plasty)\textsuperscript{5} have now been abandoned due to high morbidity and longer hospital stay, easier techniques are still being performed with good results (Table 3). The ideal procedure should be simple, should lead to no or minimal early and late morbidity, and should restore anal function with a good long-term outcome.\textsuperscript{21} In patients with a moderate degree of stenosis, a single sphincterotomy may be sufficient treatment; however, when fibrosis is intense, it might be an obstacle to the physiologic anal dilation occurring during evacuation, indicating the need for the interposition of normal tissue.

In this study, results obtained in 77 patients with severe anal stenosis who underwent anoplasty with a skin flap advancement were presented. None of the 63 patients who had a previous hemorrhoidectomy had undergone that surgery at our institution. They had undergone surgery over a period of 25 years, which partially explains the time interval required for operating on a relatively small number of patients, and made adequate follow-up a difficult task. Notwithstanding, a one-year follow-up was obtained for all patients.

Sarner’s\textsuperscript{4} and Musiari’s\textsuperscript{4} techniques for anoplasty are simple and undemanding operations associated with low morbidity and good functional results.\textsuperscript{8,15,16,20} Complications from these procedures include flap necrosis from loss of vascular supply, suture line dehiscence from excessive tension, donor site problems, local infection, urinary tract infection, incontinence, and re-stenosis. In this series, only minor complications (pruritus in 2 patients and temporary anal incontinence in 1) were observed. One patient underwent early reoperation due to suture line dehiscence in order to prevent flap contracture. After 1 year, good results were observed in 67 (87%) patients. Although results were suboptimal for 10 (13%) patients, medical management offered good palliation, and reoperation was judged unnecessary by the patients themselves. No patient required outpatient or hospital dilation over the 1-year follow-up, since finger examination was possible in all patients.

<table>
<thead>
<tr>
<th>Author, year</th>
<th>Technique</th>
<th>Number of cases</th>
<th>Mean Follow-up (months)</th>
<th>Good results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gonzalez et al., 1995</td>
<td>S-plasty and advancement flaps</td>
<td>17</td>
<td>18</td>
<td>94%</td>
</tr>
<tr>
<td>Sarner, 1969</td>
<td>Sarner’s flap</td>
<td>21</td>
<td>12</td>
<td>92%</td>
</tr>
<tr>
<td>Oh &amp; Zinberg, 1982</td>
<td>C-plasty</td>
<td>12</td>
<td>12</td>
<td>92%</td>
</tr>
<tr>
<td>Khubchandani, 1985</td>
<td>Mucosal flap</td>
<td>53</td>
<td>12</td>
<td>94.1%</td>
</tr>
<tr>
<td>Gingold &amp; Arvanitis, 1986</td>
<td>Y-V</td>
<td>14</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>Milson &amp; Mazier, 1986</td>
<td>Y-V (1) and Sarner’s flap</td>
<td>24</td>
<td>Minimum: 1</td>
<td>90% (1)75% (2)</td>
</tr>
<tr>
<td>Caplin &amp; Kodner, 1986</td>
<td>Island flap</td>
<td>7</td>
<td>19</td>
<td>92%</td>
</tr>
<tr>
<td>Pearl et al., 1990</td>
<td>Island flaps (U or diamond)</td>
<td>25</td>
<td>19</td>
<td>92%</td>
</tr>
<tr>
<td>Habr-Gama et al., 1991</td>
<td>Sarner’s and Musiari’s flaps</td>
<td>61</td>
<td>12</td>
<td>92%</td>
</tr>
<tr>
<td>Angelichik et al., 1993</td>
<td>Y-V anoplasty or diamond flap</td>
<td>14</td>
<td>36</td>
<td>91%</td>
</tr>
<tr>
<td>Pidala et al., 1994</td>
<td>Island flap</td>
<td>28</td>
<td>24</td>
<td>90%</td>
</tr>
<tr>
<td>Sentovich et al., 1996</td>
<td>House flap</td>
<td>21</td>
<td>50</td>
<td>90%</td>
</tr>
<tr>
<td>Medeiros, 1997</td>
<td>Sarner’s flap</td>
<td>30</td>
<td>12</td>
<td>100%</td>
</tr>
<tr>
<td>Maria et al., 1998</td>
<td>Y-V anoplasty or diamond flap</td>
<td>42</td>
<td>24</td>
<td>93%</td>
</tr>
<tr>
<td>Rakhamene et al., 2002</td>
<td>Mucosal flap</td>
<td>95</td>
<td>50</td>
<td>90%</td>
</tr>
</tbody>
</table>

Nr: not reported

OBJETIVO: A estenose anal é uma condição rara, incapacitante e desafiadora que ocorre principalmente após hemorroidectomia, para a qual diversas técnicas cirúrgicas reparadoras foram desenvolvidas. O objetivo deste estudo é descrever os resultados precoces e tardios (um ano) de 77 anoplastias realizadas no Serviço de Cirurgia Colorretal.


RESULTADOS: As complicações precoces foram: prurido em dois pacientes, infecção urinária em um paciente e incontinência fecal temporária em outro. Um paciente necessitou reoperação precoce por desincêncio de linha de sutura. Os resultados tardios foram classificados como bons em 67 (87%). Não houve reoperação por recorrência de estenose.

CONCLUSÃO: A facilidade técnica, os bons resultados funcionais e a ausência de complicações graves demonstraram que as técnicas de avanço de retalho de Sarner e Musiari são efetivas e seguras para correção de estenose anal, particularmente nos casos em que a fibrose cutânea é o principal fator etiológico.


REFERENCES

CONCLUSION The ease of performance, good functional results, and lack of severe complications demonstrate that Sarner’s and Musiari’s flap advancement techniques are effective and safe methods for surgical correction of anal stenosis, particularly when cutaneous fibrosis plays a major role in the etiology of anal stenosis.