In 1969 Lord\(^1\) introduced anal dilatation in anesthetized patients as a simple and effective therapy for hemorrhoids. He suggested that the anal canal and lower rectum of patients with hemorrhoids is constricted by fibrous "pecten bands" forcing them to strain excessively at defecation in order to overcome the anal "high pressure zone" and thereby causing venous congestion and hence the hemorrhoids.

Dilating the anal canal, so that eight fingers can be inserted, would relieve this stenosis, thereby reversing and curing the hemorrhoidal condition. The aim of this study is to evaluate the effect of Lord's treatment by means of pressure recordings in the normal and pathologic anal canals.

**Patients and Methods**

Anal pressure was studied pre-and postoperatively in 28 patients with hemorrhoids and also in 32 normal subjects. The control series consisted of hospitalized patients who had never been found to have any anorectal pathology. The population included patients with second as well as third-degree hemorrhoids (Table 1).

Second degree hemorrhoids were diagnosed when the patient complained of anal bleeding and occasional prolapse at defecation, which reduced spontaneously afterwards. Third degree hemorrhoids were defined as prolapsing piles which necessitated manual reduction or remained permanently prolapsed.

Patients with associated pathology, such as anal fissure and fistula were not included.

Pressure recordings were made preoperatively as well as on the eighth day postoperatively in the group of 16 patients who underwent a conventional St. Mark's hemorrhoidectomy, and 48 hours after a Lord-type anal dilatation in 12 patients. Anal dilatation or internal sphincterotomy was never performed on any patient in the hemorrhoidectomy group.

Anal pressure was recorded by means of an anal probe, consisting of a latex balloon, 1 cm in diameter, 1.5 cm in length, placed 1 cm from the top of a hard plastic rod, with an outer diameter of 0.8 cm and a total length of 15 cm. Probe and balloon were filled with water and the balloon inflated to a pressure between 8 and 12 mm Hg. The probe was connected by a fine polyethylene tube to a physiologic pressure transducer (Hewlett-Packard 1280 c) and this was connected, in turn, to a pressure amplifier and thermal tip recorder (HP 8805 c and 7754 a).

With the patient lying in the left lateral position, the cannula was introduced through the anal canal by means of a conventional proctoscope. Recordings were taken with the midpoint of the balloon at 1, 2, 3, and 4 cm from the anal verge and lasted about 4 minutes at each position.

The means of the pressures at 1, 2 and 3 cm, in a relaxed patient, was defined as the "resting anal pressure."\(^2\) Results were statistically analyzed using the Student t test.

**Results**

There was no significant difference between the mean anal resting pressure of the controls (69.62 mm Hg) and the patients with hemorrhoids before operation (73.39 mm Hg). (Table 2; Fig. 1).

The mean anal pressure of the subgroup of patients with extensive third-degree hemorrhoids (n = 16) was not higher than that of the controls or the entire patient population.

Lord's anal dilatation significantly reduced the anal pressure in the treated group from 78.6 to 43.8 mm Hg (p < 0.01) (Table 2). Anal pressure was only slightly lowered following hemorrhoidectomy, as indicated by measurements eight days after intervention (Table 2).
Discussion

In 1969 Lord\(^1\) showed that an extensive anal dilatation can offer an efficient and definite treatment for most hemorrhoidal conditions. While several reports and trials have confirmed its efficacy in clinical practice, its theoretical foundation remains obscure.\(^2\-4\)

Lord\(^1\) suggested that the anal canal of patients with hemorrhoids is constricted by abnormal fibrous bands, particularly in the region of the pecten and around the lower third of the rectum. This narrowing interferes with the normal process of defecation, forces the patient to strain excessively, causing venous congestion and hence hemorrhoids.

However, the existence of these fibrous "pecten bands," first described by Miles in 1919,\(^8\) has never been satisfactorily demonstrated. After extensive histologic studies, Eisenhammer,\(^9\) Goligher et al.,\(^10\) and Ortiz et al.\(^11\) came to the conclusion that these so-called pecten bands are merely contracted fibers of the internal sphincter, which assume undue prominence on stretching. Fine and Lawes\(^12\) on the other hand, considered them to be hypertrophied fasciculi of the muscular submucosae ani.

An alternative explanation for the supposed constriction of the anal canal in patients with hemorrhoids was offered by Allgöwer and Rüedi.\(^13\) These authors claimed that the internal sphincter was practically devoid of ganglia from Auerbach's plexus. This "gangliopenia" maintains the anal canal in a permanent state of closure and makes passive dilatation by the fecal bolus necessary for its opening. This gangliopenia would be even more pronounced in patients with hemorrhoids, leading to an abnormal raising of the intrarectal pressure during the act of defecation.\(^1\)

To evaluate objectively this basic concept of an anatomic or functional constriction, several investigators have undertaken physiologic studies, using

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Pressure (mm Hg)</th>
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<tbody>
<tr>
<td>Controls</td>
<td>69.62 ± 7.74</td>
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<tr>
<td>Patients</td>
<td></td>
</tr>
<tr>
<td>Preoperative</td>
<td>73.39 ± 12.85</td>
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<tr>
<td>Postoperative</td>
<td></td>
</tr>
<tr>
<td>Anal dilation</td>
<td>43.80 ± 12.28</td>
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<tr>
<td>Hemorrhoidectomy</td>
<td>69.00 ± 8.96</td>
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