A rectal cone is disclosed which is used in postoperative treatment following a marked enlargement of the anal canal during the operative procedure and which presents a peripheral surface having critical characteristics of configuration and dimension for accomplishing physiological benefits and convalescence with minimum discomfort.

5 Claims, 2 Drawing Figures
RECTAL CONE FOR USE IN POSTOPERATIVE TREATMENT

FIELD OF THE INVENTION
This invention relates to operative techniques involving the anal canal such as hemorrhoidectomy, fistulotomy and fissurectomy.

BACKGROUND OF THE INVENTION
Operations of the nature aforesaid are of relatively common occurrence. Such operations when carried out according to conventional procedures are attended with a great deal of postoperative discomfort. Moreover, recurrence of the condition giving rise to the necessity for the operation is not uncommon.

GENERAL STATEMENT OF THE INVENTION
According to this invention an operative technique is utilized wherein the anal canal is markedly enlarged. This procedure is then followed by the insertion of a rectal cone at intervals of short duration of diminishing frequency. In order to accomplish the objects of the invention, the size and dimensional characteristics of the rectal cone are of critical importance. One of the advantages that are afforded by this invention is that postoperative pain and discomfort are very greatly reduced, enabling the discharge of the patient from the hospital on the following day. Moreover, recurrence of the condition giving rise to the operation is greatly reduced as compared with prior procedures. The use of the rectal cone of this invention also has the advantage of preventing strictures and preventing the formation of scar tissue. Other advantages as compared with prior practices are that postoperative complications are lessened and, more generally, experience with many hundreds of patients has demonstrated that recovery is decidedly hastened and a much more pleasant postoperative convalescence is made possible.

During the course of the operative procedure the anal canal and the lower portion of the rectum are markedly enlarged and such tissue removed as is deemed necessary. For a short time thereafter a moistened sponge may be inserted into the anal canal and then removed.

In the practice of this invention the operative enlargement of the anal canal is followed by the employment during convalescence of the rectal cone, the use of which has been discovered to afford the aforesaid advantages as compared with prior practices but which must be critically dimensioned in order to have these beneficial effects. This postoperative treatment typically involves an insertion of the rectal cone for a period of about 1 minute on the day after the operation and on every day thereafter during the next several weeks under the guidance and at the discretion of the surgeon. Thereafter the frequency of insertion may be decreased over a period of several months and finally discontinued. When the rectal cone is properly dimensioned in accordance with this invention the aforesaid postoperative treatment has the effect of removing physiological abnormalities which were a causative factor in the condition giving rise to the operative necessity so that recurrence is reduced to a very low minimum and discomfort during convalescence is greatly reduced as compared with prior practices.

DETAILED DESCRIPTION OF THE INVENTION
In order to obtain the advantages and physiological response that may be realized according to this invention, the rectal cone must be of a highly specific nature as regards peripheral shape and dimensions. The rectal cone in its preferred form is shown substantially to scale in the accompanying drawing wherein FIGS. 1 and 2 are side and top views, respectively. The cone comprises an insertable portion 10, the annular shoulder portion 11, and a handle 12. The length of the insertable portion, which is indicated by the dimension \( l_1 \), is 3 1/8 inches. The insertable portion presents a smooth peripheral surface, the transverse cross sections of which along its length are substantially circular. The longitudinal cross section of the insertable portion in the plane of the longitudinal axis presents a curved blunt end that flares rearwardly, as shown, with progressively diminishing gradual curvature to a maximum diameter of 1 1/8 inches, which is indicated by the dimension \( d_1 \). This maximum dimension is spaced from the shoulder portion by a distance \( l_2 \) about seven-eighths inch to 1 1/4 inches. In the region between the shoulder portion and the portion having maximum diameter the longitudinal cross section has a gradually curved waist such that the innermost diameter \( d_2 \) is about one-eighth inch less than the aforesaid maximum diameter of 1 1/8 inches. Preferably the longitudinal cross section of the peripheral surface of the insertable portion comprises a slightly curved zone approximately 1 1/2 inches in length which is below said waist and within which the aforesaid maximum diameter occurs. This zone is indicated on the drawing by the dimension \( l_3 \) and throughout this zone the departure from the maximum diameter preferably is not more than about one-eighth inch.

As regards the annular shoulder portion 11, the dimensional characteristics are not as critical inasmuch as the function of the shoulder is to be sufficiently greater in diameter than the maximum diameter of the insertable portion to effectively restrain further insertion when the insertable portion is fully inserted. Similarly, the handle 12 may be of any suitable size and dimension which facilitate handling when inserting and removing the rectal cone. For convenience in the latter stage of convalescence the cone may have peripheral markings 13 thereon at suitable diameters which indicate degrees of partial insertion which the operating surgeon in his discretion may regard as desirable under certain circumstances.

The dimensions of the rectal cone have been found to be critically important. If the maximum diameter is substantially greater than about 1 1/2 inches difficulties are likely to be encountered due to subsequent incontinence. If the minimum diameter is substantially less than about 1 1/2 inches the risk of post-operative complications such as pain, scarring and recurrence is raised to an unreasonable degree. Thus, a maximum diameter of the order of 1 1/8 inches has been found to be of utmost importance in obtaining the advantages hereinabove stated including more especially prevention of recurrence of the physiological condition which initially necessitated the operation. More generally, the aforesaid dimensions have been found to be critical to the realization of the desired physiological response.

While the dimensional characteristics of the rectal cone are of critical importance, a slight amount of tolerance is permissible. Thus the dimension \( l_1 \), as shown in the drawing may vary between 2 1/4 inches and 4 1/8 inches. The maximum diameter \( d_1 \) may vary from 1 1/4 inches to about 1 3/8 inches. The spacing of the maximum diameter from the shoulder may vary between about three-fourths inch to about 1 1/2 inches. As regards the dimension \( d_2 \), the extent to which it is less than the maximum diameter may be of the order of one-eighth inch to five-sixteenths inch. As regards the dimension \( l_3 \), it may vary from about 1 1/4 inches to about 1 3/8 inches and in this zone the diameter is not less than the maximum diameter by a distance more than about five-sixteenths inch.

The cone may be made to proper dimensions from any suitable solid material presenting a smooth, non-irritating surface such as acetaloytosing plastic. The interior of the cone may be solid or hollow.

I claim:
1. In postoperative treatment following the operational procedure of enlargement of the anal canal, the insertion in said anal canal at intervals of short duration of diminishing frequency of a rectal cone having an insertable portion terminating in a shoulder portion, said insertable portion being about 2 1/2 inches to 4 inches in length and presenting a smooth peripheral surface the transverse cross sections of which along its length are substantially circular and the longitudinal cross section of which in the plane of the longitudinal axis presents a
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3. A rectal cone for postoperative insertion in the anal canal comprising an insertable portion terminating in an annular shoulder portion, said insertable portion being about 2 ½ inches in length and presenting a smooth peripheral surface the transverse cross sections of which along its length are substantially circular and the longitudinal cross section of which in the plane of the longitudinal axis presents a curved blunt end flaring outwardly and toward said shoulder with progressively diminishing gradual curvature to a maximum diameter of about 1 ¼ inches to 1 ½ inches that is spaced from said shoulder by about ¼ inch to 1 ¼ inches and a gradually curved waist in the region between said maximum diameter and said shoulder the innermost diameter of which is less than said maximum diameter by about one-eighth inch to five-sixteenths inch, the diameter of said shoulder portion of said cone being sufficiently greater than said maximum diameter of said insertable portion to effectively restrain further insertion when said insertable portion is fully inserted.

2. Postoperative treatment according to claim 1 which comprises the insertion of the rectal cone defined in said claim wherein the insertable portion is substantially 3 ¼ inches in length, the maximum diameter is substantially 1 ½ inches, the spacing of the maximum diameter from the shoulder is from about seven-eighths inch to about 1 ¾ inches, the minimum diameter of the waist is about one-eighth inch less than said maximum diameter and which comprises a zone about 1 ½ inches in length extending from said minimum diameter of said waist the diameter of which differs from said maximum diameter by not more than substantially one-eighth inch.

3. A rectal cone according to claim 3 wherein said longitudinal cross section of said peripheral surface of said insertable portion comprises a zone from approximately 1 ¼ inches to 1 ½ inches in length which extends from said minimum diameter of said waist so as to include said maximum diameter and the minimum diameter which differs from said maximum diameter by not more than about three-eighths inch.

4. A rectal cone according to claim 3 wherein said longitudinal cross section of said peripheral surface of said insertable portion is substantially circular and the longitudinal cross section of which in the plane of the longitudinal axis presents a curved blunt end flaring outwardly and toward said shoulder with progressively diminishing gradual curvature to a maximum diameter of about 1 ¼ inches to 1 ½ inches that is spaced from said shoulder by about three-fourths inch to 1 ¾ inches and a gradually curved waist in the region between said maximum diameter and said shoulder the innermost diameter of which is less than said maximum diameter by about one-eighth inch to five-sixteenths inch, the diameter of said shoulder portion of said cone being sufficiently greater than said maximum diameter of said insertable portion to effectively restrain further insertion when said insertable portion is fully inserted.
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,675,642 Dated July 11, 1972

Inventor(s) Peter Herent Lord

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 3, line 4, "1/4" should be --3/4--.

Signed and sealed this 30th day of January 1973.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents