تجربة توصيل القولون فى الكلاب

م • طنطاوى ، م • عبدالمنعم ، ع • بلبل ، ع • حسنى

أجرى هذا البحث لدراسة توصيل الأمعاء باستخدام حرير رقم ٢/صفر وديكسون رقم ٢/صفر وكذلك كاتجت رقم ٢/صفر بطريقة انبعاج طرفى الأمعاء للداخل وأيضا بطريقة انبعاج نصف قطر الأمعاء للداخل والنصف الآخر للخارج وذلك للوقوف على أى الطرق أفضل فى شفائها •

وقد لوحظ أن الديكسون أعطى أحسن النتائج حيث أنه بعد مرور ٢١ يوما من العملية عادت الأمعاء لما كانت عليه تقريبا من حيث الحجم والسمك باستعمال هذا الخيط •

Dept. of Surgery,
Faculty of Vet. Med. Assiut University,
Head of Dept. Prof. Dr. M. El-M. Monzaly.

EXPERIMENTAL COLONIC ANASTOMOSIS IN DOGS

(With 5 Figures)

By

M. TANTAWY, M. ABDEL-MONEIM, A.E. BOLBOL and A. HOSNY.

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SUMMARY

The influence of 2/0 eyeless silk, 2/0 Dexon* 2/0 and 4/0 chromic catgut suture materials, on the healing process of single layer inverting and everting end-to-end colonic anastomosis were studied. In all groups complete healing was acheived without any complications.

Dexon suture material proved to be superior than the others. At the end of 21 days the colonic diameter, wall thickness and lumen diameter at the operation site were nearly normal.

INTRODUCTION

In the field of experimental surgery the effect of suture materials and operative techniques are of great importance in the study of the healing process of gastrointestinal tract.

HAXTON (1965)found that catgut looses rapidly its tensile strength and was accompanied by intensive inflammatory reaction. The author concluded that silk is better than catgut for gastro-intestinal surgery. On the other hand,dacron caused few adhesions, whereas silk provoked numberous filmy adhesions both in the mesentry and arround the incision (GETZEN et al. 1966).

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*: Dexon, Davis Geck, Cyanamid of Great Britain LTD,Hampshire.

ADLER et al.(1967) were of the opinion that reconstituted collagen fibers was superior than catgut as it was more rapidly absorbed and shorten the period of raction.

GRIER (1968) used cotton threads and recorded that it causes foreign body granuloma.

In the line of these conflicting results, the aim of this work was to evaluate the influence of catgut, silk and Dexon on the healing process of inverted and everted end-to-end colonic anastomosis. In addition the degree of success of colonic anastomosis in dogs was observed.

MATERIALS AND METHODS

Thirty two clinically healthy dogs of 1-4 years old with body weight ranging from 10-20 Kg. were used for anastomosis. The dogs were divided into four groups, each 8 animals, according to the type of suture material. Each group again was subdivided into two groups according to the suture technique.

The suture materials used were 2/0 silk, 2/0 Dexon, 2/0 and 4/0 chromic catgut.

The sutures were applied in the following manner: the first subdivision of each group was sutured by continuous inverting including the whole thickness and length of the colonic wound (Fig. 1). For the second subdivision, one half of the colonic lumen diameter was sutured with interrupted everted mattress suture, while the other half was sutured with inverted Lembert sutures (Fig. 2).

The animals were sacrificed 21 days after the operations. Specimens for radiographic study were taken.

RESULTS

The appearance of the colon and its surrounding structures were inspected for the changes at the operation site e.g.adhesions, colonic diameter, wall thickness, size of the inverted flange and the absorption of the suture materials.

The diameter of the bowel cranial to the operation site was increased in comparison with the normal adjacent caudal part. There were no adhesions between the omentum and the colon.

The absorption of the suture materials differed among the groups. The Dexon and catgut disappeared macroscopically at the end of 21 days. The silk was found in situe, but it was slightly loose beginning to protrude inside the lumen.

It was shown from the radiographic picture (Fig. 3) that with Dexon healing was better and forming less stenosis than catgut or silk.

It was noticed that the colon closed by Dexon, catgut and silk by using a single layer of inverting suture was better and had slight stenosis of the lumen as shown in Fig. 4. While colon sutured by the same suture materials and half of the colon sutured by inverted and the other half be everted suture produced large stenosis (Fig. 5).

DISCUSSION

Grossly, at the end of 21 days the intestinal diameter, wall thickness, lumen diameter, at the operation site returned to normal in the majority of cases. Dexon and then catgut form

the smallest diaphragm and totally absorbed. These results agreed with the observations of HASSE et al. (1978).

The inverting anastomoses resulted in an intraluminar shelf. GETZEN et al. (1966) has performed gastrointestinal anastomosis using a one layer everting anastomosis.He reported that in experimental animals the everting anastomosis gave a larger lumen than the inverting technique.

Comparison between inverting and everting sutures for bowel anastomosis have been made by MELLISH (1966). He stated that serosa-to-serosa suture is important in avoiding leakage.

GOLIGHER et al. (1970) demonstrated that everting anastomosis are prove to disruption. The tensile stength and healing of everting anastomosis in the rabbit colon were distinctly inferior to those found in inverting anastomosis. Similar observations have been reported in previous experimental studies by LOEB (1967), HARYREAVES and KEDDIE (1968), MELLISH et al. (1968), and GILL et al. (1969).

It is surprising, perhaps, that the collagen content of everting anastomosis, many of which were leaking or in close proximity to peritoneal sepsis, was no different from that found in inverting anastomosis.

In the present study on the dogs colon anastomosis, we have found that the single layer of colon anastomosis by using Dexon and catgut surpassed other types and techniques for anastomosis.

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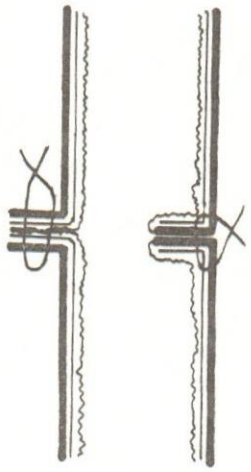

Fig. 2

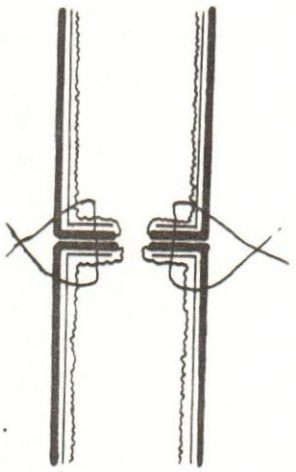

Fig. 1

Fig. 1: Anastomosis of a single layer inverting suture.

Fig. 2: Anastomosis with a half of the colon sutured by inverting Lembert suture and the other half by everting Mattress sutures.