

طرق محوره ومبسطه للازالة الجزئية والكاملة للطحال  
فى الكلب

ن . مسك ، ع . حفنى

درست الأوعية الدموية للطحال فى الكلب بغرض اختيار أفضل الأماكن  
لربطها هى وتفرعاتها وقد وجد أن ربط الأوعية الدموية للطحال قرب  
أو عند بدايتها هى أفضل الطرق للتغلب على النزيف الذى يحدث  
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A MODIFIED SIMPLIFIED TECHNIQUE FOR PARTIAL  
AND COMPLETE SPLENECTOMY IN THE DOG  
(With One Figure)

By

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SUMMARY

The branches of the splenic blood vessels of the dog was studied in preserved and injected materials. Ligature of the splenic blood vessels at or near origin shorten the time of the operation and overcomes the commonly observed haemorrhage in cases of partial and complete splenectomy.

INTRODUCTION

Severe haemorrhage from the splenic vessels is often observed in dogs in which partial or complete splenectomy is indicated according to McCUNN, 1953; KIRK 1954 and HICKMAN and WALKER 1973, as a treatment of splenomegaly, rupture, tumors or other surgical affections of the spleen.

Since the splenic vessels are the only vascularization of the spleen, ligature of these vessels near or at their origin may prevent the haemorrhage. Also the ligature of the splenic vessels in one position decreases the possibility of haemorrhage and shortens the time of operation. Partial splenectomy is an operation which can replace the complete removal of the spleen specially when the condition is restricted to a part of it as in cases of cysts, abscesses, tumors and rupture.

I- Anatomy Of The Splenic Vessels (Fig. 1)

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## MATERIAL AND METHODS

Twenty native breed dogs of different ages and sexes were bled to death under the effect of general anaesthesia. The spleen, stomach, liver, pancreas, the distal part of the oesophagus and the proximal part of the duodenum and their vessels were resected after tying the abdominal aorta cranial and caudal to the origin of the celiac artery. In 15 specimens the celiac artery was injected after tying the left gastric and hepatic arteries by coloured latex. The specimens were then preserved in 10% formalin. Dissection was then carried out to demonstrate the distribution of the splenic artery and its branches to the spleen, stomach and pancreas.

Plastoid corrosion casts of the splenic artery were prepared after the method adopted by SCHUMMER (1951).

## RESULTS AND DISCUSSION

Immediately from its origin the splenic artery detaches 2-3 pancreatic branches to the left lobe of the pancreas. About 2 cm. from its origin the splenic artery gives off the dorsal stem vessel to the dorsal part of the spleen, then curves ventrally and laterally to the hilus of the spleen; where it detaches the ventral stem branch after about 7 cm. course. The splenic artery then give rise to the middle stem branch to the middle part of the spleen nearly at the apex of the curve. The splenic artery continues its course as a left gastroepiploic artery which passes towards the greater curvature of the stomach within the gastrosplenic ligament.

The dorsal stem vessel passes toward the hilus of the dorsal half of the spleen and divides twice dichotomically resulting in four branches. The first division takes place about 2-5 cm. dorsal to its origin while the second one occurs very close to the hilus of the spleen. Each of the four vessels however redivides into a short gastric and a very

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short splenic branches. The most dorsal three splenic branches gain the spleen through the hilus while the fourth one curves ventrally, detaches 4-6 branches to the spleen and anastomosis in most cases with the most dorsal splenic branch detached from the middle stem vessel. In 3 cases an additional vessels were detached from the dorsal stem branch near its origin. The latter might end directly as a splenic branch or it might divide into a splenic and short gastric branches.

The ventral stem vessel originates from the splenic artery 7 cm. apart from the dorsal one. About 1-2 cm. from its origin it detaches several splenic branches and terminates in the omental veil.

The middle stem vessel is relatively small. It originates from the splenic artery where the latter curves ventrally to the greater curvature of the stomach and divides into two branches. One branch, shortly after its origin, courses along the hilus of the spleen where detaches many splenic branches and anastomoses with the most ventral branch of the dorsal stem vessel. The second branch (short gastric) passes within the gastrosplenic ligament where it vascularises the middle part of the fundus of the stomach. In 3 cases the middle stem vessel originates before the ventral one.

The gastroepiploic artery, the direct continuation of the splenic artery, passes in the gastrosplenic ligament towards the greater curvature of the stomach and parallel to it. It gives off 7 - 10 pairs of gastric branches and several epiploic branches and end by anastomosing with the right gastroepiploic artery.

In general the splenic vein behaves the same course as the splenic artery inside and outside the spleen and terminates by joining the portal vein.

The above obtained results in relation to the origin and mode of distribution of the splenic vessels in the dog simulates greatly those given by MILLER, et al. (1964), EVANS and DEL AHUNTA (1971), GETTY (1975) and WILKENS, (1976). However AKAEVCKY (1968) and KHROMOVA (1972) mentioned Assiut Vet.Med.J.Vol. 7, No. 13&14, 1980.

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that the left gastroepiploic artery is a branch of the ventral stem vessel which does not correspond with the present results as well as with that obtained by the aforementioned authors.

II- Partial And Complete SplenectomyMATERIALS AND OPERATIVE TECHNIQUES

Partial and complete splenectomy according to the following simplified techniques was performed on 20 native breed dogs, 10 dogs for partial and 10 dogs for complete splenectomy. In partial splenectomy 6 animals having an old healed contused wounds with adhesions and 4 animals having a normal sized clinically healthy spleen. In complete splenectomy 8 animals suffering from splenomegaly and 2 having a normal sized clinically healthy spleen.

All operations were performed under general anaesthesia using thiopental sodium (Nesdonal, Specia - Paris) 5% and premedicated by chlorpromazine hydrochloride. Laparotomy was performed in all cases at the linea alba or paralinea alba and the incision extends from the xyphoid cartilage to the umbilicus.

In cases of complete splenectomy the following technique is recommended:-

- 1- The spleen was sought out and brought out of the wound as much as is necessary.
- 2- The seat of ligature of the splenic artery and vein was situated just before the detachment of the dorsal stem vessel which can be determined by the presence of the splenic lymph node. It is important to separate the blood vessels and specially the splenic artery from the surrounding fat by a blunt dissection.
- 3- Ligatures were applied to the splenic vessels at two positions and cut inbetween.
- 4- The spleen can be removed by cutting the phrenicosplenic and the gastrosplenic ligament close to the hilus.

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5- The operation was completed by suturing the abdominal wall as usual.

In partial splenectomy the following technique is recommended:-

- 1- The spleen was brought out through the abdominal wound.
- 2- The seat of ligature depends upon whether the dorsal or ventral part of the spleen is to be removed.
- 3- When the small dorsal part is to be removed the dorsal stem vessel of the splenic artery and vein are ligated near its origin at two positions and cut inbetween.
- 4- The spleen itself was ligated at its constricted part around its whole thickness using catgut No 3 and then excised completely through its thickness 1 cm proximal to the ligature.
- 5- The stump was covered by a part of the gastrosplenic ligament.
- 6- The phrenosplenic ligament and part of the gastrosplenic ligament were severed close to its attachment to the dorsal part of the spleen.
- 7- The operation was completed by suturing the abdominal wall as usual.

The same technique was performed when the ventral part of the spleen is necessary to be removed by ligating the second and third stem vessels of the splenic artery only and by the excision of the spleen distal to its ligature.

### Comments On The Operation Techniques

All animals survived the operation and healing by primary union took place. The time of operation was actually reduced using the techniques mentioned before, it ranges from 15-20 minutes. Haemorrhage was not met with in cases of partial or complete splenectomy.

McCUNN, 1953; KIRK, 1954 and HICKMAN and WALKER, 1973 stated that the rather complex vascular structure of the spleen necessitated the identification and separated ligation of the numerous splenic branches before they can be divided close to the hilus of the spleen. They advised applying a strong ligatures including a generous amount of fatty gastrosplenic ligament which contains the splenic vessels without

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giving the exact seat of ligatures. Also the ligation of the splenic vessels in more than one position increases the possibilities of haemorrhage from a faulty ligation or the slipping of the suture material as a result of the presence of large amount of fat.

The possibilities of haemorrhage resulting from the adopting techniques of the aforementioned authors was overcome by the ligation of the splenic vessels close to its origin.

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Fig. 1: Splenic artery in the dog.

- 1- Splenic artery.
  - 2- Dorsal stem vessel.
  - 3- Ventral stem vessel.
  - 4- Middle stem vessel.
  - 5- Left gastroepiploic artery.
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- A- Stomach.
  - B- Dorsal part of the spleen.
  - C- Ventral part of the spleen.
  - D- Splenic lymph node.
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- I- The seat of ligature of the splenic artery in cases of complete splenectomy.
  - II- The seat of ligature of the dorsal stem vessel in cases of partial splenectomy.
  - III- The seat of ligature of the ventral stem vessel in cases of partial splenectomy.
  - IV- The seat of ligature of the middle stem vessel in cases of partial splenectomy.
  - V- The seat of ligature of the spleen in cases of partial splenectomy.





