

To ligate or not to ligate the hernial sac in adults?

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ABSTRACT

Objective: Prospective evaluation of the long term effect of leaving the hernial sac open without ligation on the recurrence rate of indirect inguinal hernia repair.

Methods: During the period from July 1987 to July 1990, a total of 60 consecutive patients with 64 indirect inguinal hernia were entered into this prospective study. The indirect inguinal hernia was repaired using Maloney technique with excision of the hernial sac proximally as deep as possible without any attempt to ligate or transfix the sac. All patients were followed up at regular intervals.

Results: During the 3-year period, a total of 64 indirect inguinal hernia in 60 consecutive patients were repaired.

Their ages ranged between 15-85 years (mean of 50 years). The follow up ranged from 9-12 years (a mean of 10 years and 5 months). Four patients died of unrelated causes. There was no clinically documented case of recurrence in the remaining 56 patients.

Conclusion: This study, although not controlled, confirmed that non-ligation of the proximal sac during indirect hernia repair was not associated with an increase rate of recurrence.

Keywords: Indirect inguinal hernia, technique, ligation, Maloney darn.

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The controversy regarding ligation of the proximal hernial sac during repair of an indirect hernia has been unresolved for many years, and there are few studies, which clearly address this issue.¹ The value of peritoneal closure in abdominal wounds has long been questioned. It is clear, however, that the peritoneum heals rapidly within 3-5 days leaving no adhesions in both large and small defects.² It has also been proven that leaving the peritoneum open in closure is not associated with an increased wound failure rate.³ This study was undertaken to determine if these principles apply to indirect hernia repair.

Methods. During the period between July 1987 and July 1990, a total of 60 consecutive patients with indirect inguinal hernia admitted under the care of the first author (KG) to Princess Basma Teaching

Hospital were included in this study with no exclusion criteria. There were two patients with recurrent hernia and four had bilateral hernia. All patients were operated upon, by one surgeon (KG). Two cases were performed under local anesthesia and none received pre or perioperative antibiotics. The inguinal region was exposed through a transverse incision centered over the internal ring. The sac was identified, dissected off the spermatic cord proximally to the internal ring and the cremasteric muscle was excised. The sac was opened and inspected from inside. Repair was then carried out using the Maloney technique.⁴ The transversalis fascia was plicated with 2/0 Prolene (Ethicon, Edinburgh, UK) taking care to tighten the internal ring to allow the passage of the little finger only, during this step or at its end, depending on the

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thickness and the size of the sac, the sac was excised as deep as possible and any significant bleeding from the edge was cauterized with diathermy. Prolene Zero was used to darn the posterior wall of the inguinal canal between the conjoint tendon and the inguinal ligament, by starting the suturing in the pubic tubercle towards the internal ring then backward to the pubic tubercle. The external oblique was sutured with 2/0 Vicryl (Ethicon, Edinburgh, UK). The skin was closed with 3/0 Prolene. All patients were followed up in the outpatient department after two weeks, six weeks, three months and one year. They were thoroughly questioned and examined for any evidence of recurrence or other complications. In July 1999, all the patients were contacted and requested to attend for a final examination. This examination was carried out by the second author (YM) who was not involved with the surgery.

Results. During the 3-year period a total of 64 indirect inguinal hernia in 60 consecutive patients were repaired. There were 57 males and 3 females. Their ages ranged from 15-85 years with a mean age of 50 years. There were two patients with recurrent hernia and four had bilateral hernia. Post-operative hospital stay ranged from 1-3 days with a mean 1.5 days.

Fifty-six patients attended the final review examination, and four elderly patients had died of unrelated reasons. There was no clinical evidence of recurrence in any of the 56 patients. The follow-up ranged from 9-12 years with a mean of 10 years and 5 months and no patients defaulted from follow-up.

Discussion. Our study demonstrated that leaving the sac open has no effect on the recurrence rate. It has been shown that, during abdominal surgery, the peritoneum heals rapidly within 2-3 days, leaving no adhesions, regardless of the size of the defect² and leaving the peritoneum open was not associated with an increased incidence of wound failure.³ Despite this, various reports discussing recurrence considered excision and high ligation of the indirect inguinal hernia sac an essential part of the repair, and if not performed properly recurrence is more common.⁵⁻⁸ Studies reporting on open hernia technique still describe ligating the sac.^{9,10} In all of the above references,⁵⁻¹⁰ the sac ligation was either quoted in passing or it was over emphasized as an essential part of the repair. There was, however, very little support for this step and no further clinical or experimental analysis provided.

The place of non-ligation,¹¹⁻¹³ was well documented by Smedberg et al,¹ who presented the only prospective and controlled study of either ligation and excision of the sac or excising the sac as deep as possible, then leaving it open without ligation or

transfixion.¹ They used both clinical and radiological methods to define recurrence. Their follow-up was rather short (2-3 years). The study showed that leaving the sac open does not compromise the repair and results in less post-operative pain. Their study has been quoted in some surgical textbooks.^{14,15} Other factors, which affect recurrence in an indirect hernia, include the technique and the duration of follow up.^{5-8,10,13-18} Surgical textbooks describes many techniques used to repair inguinal hernia. The most recent are the Shouldice, Laparoscopic and Lichtenstein techniques. The Laparoscopic technique^{19,20} deals with the sac by reduction only, without any attempt to excise it, a mesh is then applied. The laparoscopic technique however, is not widely accepted nor practiced yet.²¹ Lichtenstein feels that the sac does not contribute to the prevention of recurrence²² and in his original description of the technique, which is popular today, the sac is reduced through an open groin incision without any attempt to excise it, a mesh is then applied.²³ Others however, who adopted this technique, ligate and excise the sac instead of only reducing it.²⁴ The older Maloney technique,⁴ (which is considered a modification of Bassini) is still practiced in the UK with better results than the Shouldice and the laparoscopic results.^{25,26} New open hernia operations like Lichtenstein and the Shouldice repair, are now the most common types performed,²⁷ with the majority advocating excision and ligation of the sac as proximal as possible to minimize recurrence.⁵⁻⁸ When we started our study we used the Maloney technique, which we had adopted during our training in the UK, and in a developing country such as ours with limited individual income it is cheaper than Lichtenstein and the laparoscopic techniques. From 1990 it has been our practice to excise the sac as high as possible, without any attempts to ligate it and so far, there have been no cases of recurrence. To our knowledge our study of simple excision of the hernial sac is the only one, with such a long follow-up and no dropouts except those who died. It suggests that non-ligation does not have any early or late effects on repair integrity. We believe that, "to ligate or not to ligate" is not just an un-important or academic argument since non-ligation may be advantageous without increasing the morbidity. It makes the repair more complete and rapid,¹ limits the dissection and hence reduces the morbidity and risk of injury to the spermatic cord and surrounded structures,^{16,28} is safer and more appropriate for repair of sliding hernia and leaving the peritoneum open has lower incidence of adhesions.^{3,29} Furthermore it is slightly less costly. Ligation, on the other hand, needs more dissection and causes greater post-operative discomfort.¹ It has also no added advantage in improving wound failure rate.

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