
INCIDENTAL APPENDICECTOMY: HOW FAR IS IT JUSTIFIABLE?

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Introduction

The so called “incidental appendectomy”, which is the removal of the appendix in the course of other surgical procedure must be differentiated from the removal of a normal appendix during exploration for presumed acute appendicitis. It must also be differentiated from elective; that is planned, appendectomy, and from prophylactic appendectomy advocate recently with the wide use of laparoscopic surgery.

In the last two decades, there has been a resurgence of interest in this question. Generally speaking, there are surgeons who believe that they should not take anything out unless there is a clear indication. This is an extreme on the other side of which there are surgeons who routinely remove the appendix if it comes to be accessible in the course of the operative procedure. Amidst those two groups, there are surgeons who do occasionally practice incidental appen-

dectomy under special circumstances. In the last decade, with the advent and wide use of laparoscopic surgery, a group of surgeons started to believe that incidental appendectomy could be very well justifiable if they are operating laparoscopically.

Subject

In June 1999, a questionnaire paper was formulated and distributed among practicing surgeons. A question was put deliberately, exhibiting the different kinds of practice regarding “Incidental appendectomy”, and the surgeon was asked to mark the choice that suites his current practice. There is a blank area left down to write in the justifications the surgeon believes in regarding his current practice (Table I).

Ninety surgeons participated by filling the questionnaire paper. Thirteen (15%) of them did not take out anything unless there was a clear indication, and only 10 (12%) practiced incidental appendectomy routinely. The majority (56

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surgeons) (62%) practiced incidental appendectomy occasionally under special circumstances.

*Regarding incidental appendectomy (in the course of other surgical procedure) your current practice is that:

- You do not take anything out unless there is a clear indication.
- You routinely practice incidental appendectomy.
- You occasionally practice incidental appendectomy.
- You justify it only if you are operating laparoscopically.

Your justification(s) is (are):

Table I. The format of the questionnaire paper.

Although there were only 35 laparoscopic surgeons participating in the questionnaire, 31 (35%) of surgeons justified laparoscopic incidental appendectomy, all of whom were those who practiced incidental appendectomy occasionally (Table II).

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|----|-----|---|
| 13 | 15% | You do not take anything out unless there is a clear indication |
| 10 | 12% | You routinely practice incidental appendectomy. |
| 56 | 62% | You occasionally practice incidental appendectomy. |
| 31 | 35% | You justify it only if you are operating laparoscopically. |

Table II. NB the total out numbered 90 because 28 surgeon labeled more than one choice.

The justification of each group will be presented in the discussion below.

Overview

It seems the minority of surgeons practice incidental appendectomy routinely. It was justified on the following basis:

- 1- The risk of infection, whether in the operative field or in the wound, is negligible with a careful technique.
- 2- There is always the possibility of future appendicitis, and hence the need to go again into an unvirgin peritoneal cavity, which would definitely increase the difficulty of the procedure.
- 3- The removal of the appendix adds but little to the time of operation, yet saves a lot of surgical and financial resources in case appendectomy is needed in the future.
- 4- Morbidity and mortality of acute appendicitis and the possibility of subsequent perforation, out-weight any possible benefits from this organ.
- 5- There is always a chance to discover an insitue asymptomatic pathology in the removed appendix. Primary adenocarcinoma¹, carcinoid tumour², and primary T-cell non-hodgkins lymphoma³, had all been reported to be discovered in incidentally re-moved appendices.

On the other hand, the majority who practice incidental appendectomy occasionally, do believe that it is justifiable if:

- 1) The main operation is elective.
- 2) The patient is stable.
- 3) There is no special risk of infection.
- 4) The operation should not require extending the incision or time consuming dissection through adhesions from previous operations(s).

The justifications for “do not take anything out unless there is clear indication” were:

1. During appendectomy, there is always a minimum risk of infection, in the operative field or in the wound.
2. A patients whose appendix had been taken out through an incision other than “a grid iron” needs a notification least he or she may have a future diagnostic mishap.
3. Currently, there are a lot of evidence suggesting that “the appendix is a highly specialized part of the alimentary tract with some possible functions”. This proposal depends on the fact that lymphoid tissue appears first about two weeks after birth, increasing gradually to its peak between the age of 12 and 20. After 30, there is an abrupt reduction to less than half the amount of lymphoid tissue, then to a trace or total absence after 60. There are evidence that the appendix may be involved partially in the formation of B-lymphocyte and may participate in the secretary immune system in the gut, as a matter of fact some researchers claim that “the appendix is a useful though not indispensable, immunological organ”⁴. Furthermore, there is evidence that the appendix may be an immune modulator of the gut, and its absence may lead to an increase in gastro-intestinal illnesses. Minocha and colleagues from USA⁵ stated in 1999 that if this is true, then patients needing endoscopy should have a higher prevalence of previous appendicetomy. They did a case control study at the University of Oklahoma Hospital for 13 months, and subjects having endoscopic evaluation formed the study group, and patients seen at the general medicine clinic served as controls. They concluded that “history of appendectomy was associated with greater performance of endoscopy”⁵.
4. In the last three decades, the appendix had been proved useful in many surgical procedures, making a case incidental appendectomy, e.g.:
 - a) The appendix has occasionally been used to replace sections of the “right ureter”. Richter et al. reported in 2000 their experience with right ureteral substitution using the appendix and they reviewed the literature of the last 25 years on the use of the appendix as right ureteral replacement⁶. They reported that the appendix transports urine satisfactorily and permits renal function to be maintained with no evidence of obstruction. They con-cluded that the appendix can be used as a right ureteral substitute in selected cases⁶.
 - b) Koshima et al. reported in March 1999 a new technique for urethral reconstruction in cases of poorly vascularized tissues as well as for total penile creation⁷. They stated that despite the development of newer technique with a free radial forearm tube flaps for phallus reconstruction, severe urethral strictures are still seen after irradiation or repeated infection because of paucity of healthy, well vascularized, tissue. A new technique involving a free vascularized appen-dix transfer combined with a radial forearm osteocutenous flap was successfully used in two cases. The appendix provides a normal tube structure composed of a muscular tubular layer lined with mucosal epithelium. It has no hair and has rich vascularization, this results in little stricture at the junction with original

- urethra, no occurrence of urethral stones, and possible post-operative enlargement of the diameter with changes in catheters. They concluded that this method would allow a patient with severe fibrosis around the urethra to undergo one-stage phallus reconstruction with minimal complications⁷.
- c) Appendicovesicostomy was also used as a new alternative for mitrofanoff procedure⁸. Cain and colleagues re-ported in 1999 their experience using the various mitrofanoff techniques to create a continent catheterizable stoma as an adjunct to continent urinary tract reconstruction in children and young adults in the period between 1990 and 1998⁹. They concluded that the mitrofanoff procedure is a reliable technique for creating a continent catheterizable urinary stoma. Appendicovesicostomy continues to be their first option for this procedure.
- d) In the same way that the mitrofanoff catheterizable channel gave access to the bladder, and thus a potential for urinary continence, the malone stoma has prepared the way for a new approach to encopresis leading to renewed pleas for appendiceal conservation in selected patients (Wheeler and Malone, 1991)¹⁰. The Malone stoma¹¹ is a continent appendicocaecostomy. The original description was of a reversed appendix reimplanted into the caecum with a submucosal tunnel to prevent reflux. The base of the appendix led through the anterior abdominal wall. This had been modified by some authors (Squire et al, 1993)¹² to an orthotopic technique. The appendicular attachment to the caecum is imbricated around the appendix base and the appendix tip merely exteriorized. The stoma is usually sited in the right iliac fossa so that it can be readily accessible to the patient and is catheterized with an 8-12 F jaques catheter through which ACE (Antegrades Colonic Enema) can be introduced.
- e) Gangopadhyay et al. reported in 1999¹³ the use of appendicostomy as a venting enterostomy for a delayed case of colonic atresia. They performed the operation in eight cases of colonic atresia with good results during the period from 1990 to 1995.
- f) Rebhanedl and colleague (1999)¹⁴ reported biliary diversion by the use of the appendix (cholecysto appendicostomy) in cases with progressive familial intrahepatic cholestasis.
5. Neulander and colleagues reviewed the incidence of appendectomy performed during radical cystectomy and urinary diversion. They reported, in August 2000, that they were interested in the reasons behind the decision and if continent diversions have changed the policy¹⁵. They performed a selective survey among urologists in academic centres throughout the United States regarding their practice of incidental appendectomy during radical cystectomy. They concluded that incidental appendectomy during radical cystectomy was not necessary and was no longer performed as the risk of subsequent appendicitis is extremely low. In contrary to this work, Da Silva and colleagues reported in 1999¹⁶ that in spite of the long

standing use of the appendix in urological reconstructive surgery, it was not until the 1980's that it became popular. They stated that anatomical and histological normality is the major consideration to allow the use of the appendix in autografting. Over a 9 years period, performance of incidental appendectomies in abdominal major surgery in adult patients was included as a surgical routine practice and they described the patho - anatomical findings of incidentally removed appendices and its importance in the decision to use the appendix in urological practice.

6. The possibility of "medico-legal aspect" of an "un indicated procedure" was raised by some colleagues as a justification for not removing the appendix incidentally.

With the advent of laparoscopic surgery, laparoscopic appendectomy is becoming more popular. The first description of a laparoscopic incidental appendectomy was in 1983 by Semm in Germany¹⁷ although one third of surgeons participating in the questionnaire were justifying incidental laparoscopic appendectomy, there was no clear reasoning for it. A recent review of the literature suggests a possible role for incidental appendectomy in patients between the age of 10 and 30, but the indications are less clear for those who are 30-50 years old, and no benefits are apparent in those older than 50 years¹⁸. Still, more and more surgeons are practicing incidental laparoscopic appendectomy, some even go further and advocate the so called "prophylactic appendectomy" in conditions of wide applications of laparoscopic surgery, referring to the literature regarding the absence of important functions in the appendix and absence of any functional disturbances after appendectomy, taking into account high rates of development

and difficulties in the diagnosis of acute appendicitis and favorable clinical and economical results of laparoscopic appendectomy¹⁹.

Conclusion

After all, it is still difficult to assess how far incidental appendectomy is justifiable. Reasons that unjustify it stand weakly for the time being against reasons that justify the practice of incidental appendectomy. Personal opinions play a role, though, it is clear that there are situations where there is no apparent benefit from attempting the removal of the appendix incidentally, like the old age group. It is also dangerous to attempt incidental appendectomy when the risk of infection is devastating like in vascular surgery, and definitely it should not be attempted if it would require extending the incision or time consuming dissection through adhesions from previous operation(s). As far as laparoscopic appendectomy is concerned, there is a possibility that it might increase the practice of incidental appendectomy in the near future.

Finally, the conclusion that had been reached in the meeting of the American Association of Surgeons in April 1987 is an example of the controversial nature of the issue²⁰ and is apparently still time to date.

"Whether incidental appendectomy is a sound plan, or whether it is meddling, is still a controversy often engaged in between gynecologists, urologists, and general surgeons. The questions will probably never be resolved, because it is impossible to weigh the significance of the irrefutable contention that appendectomy protects patients from future appendicitis. If it is worth while, how far should the concept be carried? What about an incidental

Meckel's diverticulectomy? What about the issue of incidental cholecystectomy? What is meddling and what is justified?

**The meeting of American Association of Surgeons
April 1987**

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