

A Review Of Emergency Appendicectomy: Should Surgeons Swab?

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Abstract

Introduction: The practice of taking pus swabs for microbiological analysis during emergency appendicectomy is variable and of uncertain benefit. Most patients are discharged home before any antibiotic sensitivity is established.

Methods: The authors reviewed all emergency appendicectomies performed in a large UK teaching hospital over a six-month period to establish current practice and to examine whether swabbing affected outcome.

Results: 111 cases were examined. Senior operating surgeons sent swabs less often than junior ones. In 34 cases swabs were sent for culture and 6 showed growth. In no case did the swab result change patient management.

Discussion: The authors note that with the introduction of laparoscopic techniques performed by senior operating surgeons routine samples for microbiological analysis have been abandoned without adverse consequences. This review of our current practice suggests that swabbing during open appendicectomy could be discontinued with considerable financial benefits. We suggest a randomised-controlled trial of swab versus no swab to examine this matter further.

INTRODUCTION

Appendicitis remains one of the commonest causes of the acute abdomen in the UK. Traditionally the appendicectomy has been used as a training operation for junior members of the surgical team.¹ With the advent of minimally invasive surgical techniques, and their established benefits, particularly in women of childbearing age, there has been an increase in the number of diagnostic laparoscopies and laparoscopic appendicectomies performed within our surgical practice.² These operations require a greater level of surgical expertise and are therefore performed by more senior surgical trainees.³ The authors noted that pus swabs were not sent during these laparoscopic procedures. This is contrary to traditional surgical teaching that recommends intra-abdominal fluid or pus collections should be swabbed and sent for microbiological analysis to direct subsequent anti-microbial therapy. The common organisms and their antibiotic sensitivities cultured from swabs taken during appendicectomy are well described in the literature.^{4,5,6} There is also extensive research regarding the appropriate antibiotics for prophylaxis and suggested protocols for the therapeutic use of anti-microbials.^{7,8,9,10}

To the authors knowledge no published reports have examined the efficacy of swabbing during appendicectomy. The authors reviewed the use of microbiological testing in emergency appendicectomy within their own hospital to assess the contribution of swabs taken during surgery to subsequent patient management.

METHODS

This is a retrospective study of patients undergoing emergency appendicectomy over a six-month period within a large teaching hospital. Suitable patients for inclusion were identified using a computerised operation-coding database. The case notes and computerised laboratory results for all patients were reviewed. The patient details, surgeon and assistant grade, operative findings, histological findings, use of pus swabs, culture results, culture sensitivities, antibiotic therapy and patient outcome were recorded in each case.

RESULTS

123 patients were identified as having undergone emergency appendicectomy within the study period. These were 100 open and 23 laparoscopic procedures. There was insufficient data in 12 of the open cases and these were excluded from

the final analysis. These two groups showed similar operative and histological findings (Table I). The negative appendicectomy rate was 17% and correlates well with previous studies.¹¹

Figure 1

Table 1: Macroscopic operative findings in the open and laparoscopic subgroups

Findings	Open (n=88)	Laparoscopic (n=23)
Normal	18% (n=16)	13% (n=3)
Inflamed	47% (n=41)	43% (n=10)
Free pus	16% (n=14)	9% (n=2)
Abscess	3% (n=3)	13% (n=3)
Gangrenous	15% (n=13)	17% (n=4)
Perforated	1% (n=1)	4% (n=1)

The 23 laparoscopic appendicectomies were performed by registrars and no pus swabs were sent in any of these cases. The 88 open appendicectomies were divided into subgroups according to operator seniority. The macroscopic findings were similar in each of these subgroups. The grade of operating surgeon and frequency of pus swabs is shown in table II. Junior surgeons operating independently sent pus swabs most frequently. In the 88 open appendicectomies there were 34 cases where an intra-operative swab was taken and sent for microbiological analysis. Six patients showed positive cultures (Table III). The organisms cultured were typical large bowel pathogens and in all cases were sensitive to the anti-bacterial prophylaxis used at the time of surgery in addition to any subsequent therapeutic regimes. There were 5 E.coli, 2 S.milleri, 1 S.faecalis and 1 Klebsiella. In 3 of the cases the results were recorded in the notes whilst the patient was still in hospital due to persistent post-operative pyrexia; the mean stay for these patients was 7 days post-operatively (range 6-8). In the 3 cases where the positive results were not recorded, the mean stay post-operatively was 3.7 days (range 2-5) and the recovery was uncomplicated.

Figure 2

Table 2: Swab by operator grade (SHO=Senior house officer; REG=Registrar)

Operator	Procedure	Swabbed	Not swabbed	Total
SHO alone	Open	24	18	42
SHO+REG	Open	3	9	12
REG	Open	7	27	34
REG	Laparoscopic	0	23	23

Figure 3

Table 3: Operative findings for open appendicectomy: swabs and results

Findings	Open (n=88)	Swabs (n=34)	+ve cultures (n=6)
Normal	16	0	0
Inflamed	41	11	0
Free pus	14	13	0
Abscess	3	3	1
Gangrenous	13	6	4
Perforated	1	1	1

Of the 28 negative swabs 2 were recorded within the patients' case notes. The first was a case of persistent post-operative pyrexia and the second a case of readmission to hospital with a wound infection. The mean length of post-operative stay was 13.5 days. In the 26 cases where the negative swab results were not recorded the mean length of post-operative stay was 3.5 days (range 2-7).

Of the 88 open procedures 1 patient was readmitted with abdominal pain and underwent laparotomy and drainage of an intra-abdominal collection; no swab was sent.

Of 23 laparoscopic procedures, 22 were performed solely laparoscopically. A single case of perforation was converted to an open procedure due to technical difficulties. No pus swabs were sent for microbiological analysis in any of these cases. The mean length of stay was post operatively was 4.2 days (range 2-15). One patient underwent laparotomy and drainage of a pelvic abscess on the ninth post-operative day; a swab was taken at this time but showed no growth. A second patient was readmitted eight days post-operatively with abdominal pain and fever and underwent computed tomography guided drainage of an intra-abdominal collection. A swab was sent at this time but there was no growth.

DISCUSSION

Diagnostic laparoscopy and laparoscopic appendicectomy is performed with increasing frequency in modern surgical practice. There are clear benefits to this procedure over conventional open surgery including a better view of the pelvic contents to exclude other pathology when the appendix is not inflamed, smaller scars and a quicker recovery time. It has become the investigation and treatment of choice in women of childbearing age because of the potential differential diagnoses and the lower rate of post-operative adhesion formation with the risk of infertility. Laparoscopy allows easier removal of free pus and the ability to wash out pockets of pus particularly those found

within the pelvis.

The practise of sending routine pus swabs has widely been abandoned with the increase in the use of laparoscopic techniques, perhaps because of the need for special suction-sampling equipment or because of doubts regarding its efficacy. However, it does not appear to have adversely affected patient outcome.

Of 111 patients who underwent appendicectomy, only 34 had microbiological swabs sent for analysis. In 28 cases these failed to grow any organisms. In the 6 that did show growth, the organisms were sensitive to the administered antibiotics (cefotaxime and metronidazole or penicillin, gentamicin and metronidazole). Most patients had already been discharged when swab results became available. In those who developed a pelvic abscess there was no change in management as a result of taking a pus swab at the first operation. In no case did the taking of a microbiological swab for culture at the time of surgery affect outcome.

This review of our current practice suggests that routine swabbing for microbiological analysis in open appendicectomy could also be discontinued without adversely affecting patient outcome. There would also be considerable financial benefits as the current cost for processing each swab is about \$15 US Dollars. The authors suggest that a randomised-controlled trial of swab versus no swab should be performed to examine this area further.

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