



Tube Caecostomy: A Veritable Alternative in the Surgical Treatment of Advanced Appendicitis

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Authors' contributions

This work was carried out in collaboration between both the authors. Author OE designed the study, managed the literature searches and wrote the first draft of the manuscript. Author ZIA managed the analyses of the study. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Advanced appendicitis poses a serious challenge to surgeons in poor resource settings and it is associated with a higher morbidity and mortality.

Objective: To report the outcome of tube-caecostomy in the prevention of fistula formation after appendicectomy for appendicular mass, abscess or gangrenous appendix.

Methods: A retrospective study involving all patients diagnosed with appendix mass, abscess and gangrenous appendix admitted into Central Hospital Benin City from October 2005 to October 2010. Data was collated from patient's case notes, theatre records and the ward registers. The Stamm procedure using a size 24 three-way catheter as caecostomy tube was used.

Results: A total of 14 patients underwent tube caecostomy during appendicectomy. There were 10(71.4%) males and 6(28.6%) females. The male to female ratio was 2.5:1. The ages of the patients ranged from 14-42years with mean age of 28.5 years. Seven (50%) of the cases had wound infection, three (21%) had wound dehiscence. Hospital stay ranged from 14 to 33days with a mean stay of 19.1 days. No serious catheter related complications nor residual abscess were recorded and there were no mortalities in this study.

Conclusion: Tube caecostomy as a procedure performed for advanced appendicitis is a

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favourable alternative to interval appendicectomy, right hemicolectomy and ileostomy. The latter two procedures require an experienced surgeon and are fraught with a high morbidity and mortality.

Keywords: Advanced appendicitis; alternative surgical treatment; tube-caecostomy.

1. INTRODUCTION

Advanced appendicitis is a problem in Africa, and it is a reflection of delayed presentation. Its incidence is about 40-50% of all cases and this disease is unfortunately associated with a high mortality of about 0.9 to 4%, certainly higher than in the developed world [1]. Early appendicectomy in cases of appendicular mass or abscess is an effective treatment strategy in this modern era because of its low cost, reduced hospital stay and good patient compliance [2]. Appendicular mass, abscess or gangrenous appendix (complicated appendix) may be associated with severe Inflammation involving the base of appendix and adjoining caecal wall and dissecting out an inflamed oedematous appendix from surrounding tissues and attempting to insert a purse-string in the caecal wall can be hazardous and may result in wound infection, intra-abdominal abscess, localized or diffused peritonitis and fistula formation [2-4]. The frequency of these septic complications is as much as 30% [3].

Post-appendicectomy faecal fistula formation, though a rare complication, is associated with significant morbidity and bears serious social, psychological, medical and nutritional hazards [3].

Tube caecostomy is a simple procedure; it adequately decompresses the large and small bowel, prevents the soiling of the skin and can be performed "blind" under local anaesthesia in a seriously ill unstable patient [5]. In the aged, those who have co-morbidity or difficult surgery, caecostomy may be a safer option than a right hemi-colectomy [6]. Tube caecostomy is perhaps a rational approach in preventing postoperative abscess and fistula formation in complicated situations [3,7]. It has also been found as a useful and less invasive surgical procedure in other situations [8,9].

The aim of this study was to report the outcome of tube caecostomy in preventing fistula formation after appendicectomy for appendicular mass, abscess or gangrenous appendix.

2. PATIENTS AND METHODS

All cases of appendix mass or abscess and gangrenous appendix admitted into Central Hospital Benin City from October 2005 to October 2010 were retrospectively reviewed. Data collated from patients' case notes, theatre records and the ward registers included patient's demographics (like age and gender), operative findings, indications for carrying out tube caecostomy and procedure details, residual peritoneal abscess, wound infection, wound dehiscence and fistula formation after catheter removal were recorded on a spread sheet. All the cases except the three with generalised peritonitis had Lanz incisions for access while the latter group had right Para-median incisions. A size 24 three-way catheter was passed through an opening in the anterior abdominal wall and advanced into the caecum through a stab on its lateral wall and retained by instilling the balloon with 10 to 15 ml of normal saline. Two series of purse string were applied around the tube and the caecum around the catheter stitched to the peritoneum (Stamm procedure) [10-12]. A drain was also left either in the right para-colic gutter or in the pelvis. The daily drainage from the caecostomy tube was noted. Each tube was discontinued on the 10th post-operative day. After removal of the tube, discharge persisted for 2-4 days until the track closed spontaneously. The data collected was analyzed as age, mean age, peak age incidence, sex ratio and percentages.

3. RESULTS

A total of 14 patients from the clinical records underwent tube caecostomy during appendicectomy over the five year period. There were 10(71.4%) males and 6(28.6%) females. In all the cases, the caecal wall adjoining the appendix base was severely inflamed, oedematous and friable.

4. DISCUSSION

Interval rather than immediate appendicectomy is commonly advocated for the treatment of appendix mass or abscess on account of the latter's high incidence of entero-cutaneous fistula

formation and other septic complications [2-4] and a low recurrence rate of 5% following conservative treatment [13,14]. However interval appendicectomy involves long hospital stay, several days off work, high cost of treatment and poor patient compliance and the potential of missing an underlying malignancy [2,15,16]. Tube caecostomy on the other hand is a simple procedure that can be performed in very ill patients, patients with co-morbidity, by the less skilled surgeon, beginners and trainees and even under local anaesthesia for very ill and unstable patients [5,6]. On account of the shortcomings of interval appendicectomy, it probably became impelling to seek a middle ground between these two options. Tube caecostomy perhaps became that compromise. The idea of performing a caecostomy is to create a controlled fistula thereby preventing a spontaneous post-appendectomy faecal fistula and abscess formation in patients with severe peri-appendicitis involving the base of the appendix as well as adjoining caecal wall, at a cost of least morbidity [3]. Tube-caecostomy obviates the unfavourable sequelae of interval appendicectomy, right hemicolectomy and ileostomy which is other forms of surgical modes of treatment of these disease entities.

These procedures requires an experienced surgeon and they are associated with a high morbidity [2].

There was no case of faecal fistula recorded in this study, perhaps a pointer to the efficacy and safety of this procedure or probably due to the few number of cases in this study. However, other studies in this category show similar results [2,11].

Anecdotally appendix mass or abscess occurs more frequently in males than females in our environment. This may perhaps be due to the ability of the male to bear more pain than the female and the tendency for him to postpone seeking early medical attention. In this study unlike in others including that carried out in South-Western Nigeria, had more males than females [2].

Not all cases of appendix mass or abscess or gangrenous appendix had tube caecostomy performed in our centre. To qualify for this procedure, the caecum must be involved in severe inflammation to make performing appendicectomy with or without burying of the appendix stump hazardous.

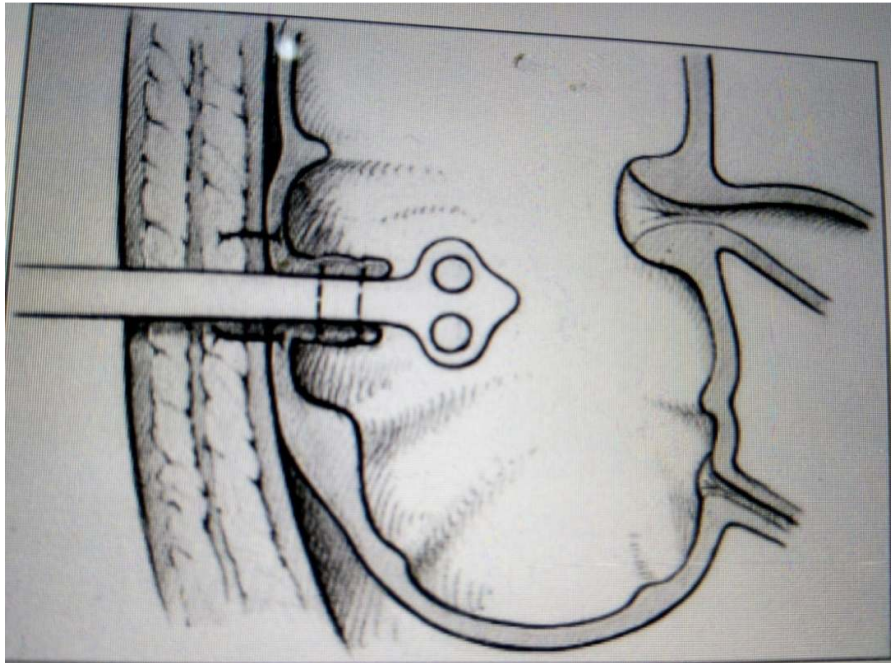


Fig. 1. The application of the Stamm procedure in the placement of a caecostomy tube (from Joerg Tschelitsch, Heinz Wykypiel, Rupert Prommegger, Ernest Badner. Colostomy vs Tube Caecostomy for Protection of a low Anastomosis in Rectal Cancer. Arch Surg. 1999; 134: 1385-1388

In two of the cases in this study, there was iatrogenic perforation of the caecum during mobilization. This is a recognised complication of appendicectomy for appendix mass or abscess [14].

The only significant morbidity in this study was in wound complications. The incidence of wound infection in this study was higher than in similar works [3, 11], probably due to a higher number of cases of perforated appendicitis with abscess formation in our series [11]. This may equally account for the higher proportion of wound breakdown in the study.

There were longer periods of hospital stay in our series compared to others due to higher wound complications in our patients [8].

The shortcomings in this study lay on the few cases studied and the retrospection of the work. In our centre, the incidence of advanced appendicitis with involvement of the base of the appendix and the adjoining caecal wall in severe inflammation is low. A prospective, comparative study with more cases may be appropriate and helpful.

Table 1. Demography, types of advanced appendicitis and outcome of 14 cases treated with tube caecostomy

Age range	14-42 years
Male to female ratio	2.5 to 1
Perforated appendicitis with abscess formation	5(57.1%)
Gangrenous appendicitis	4(28.6%)
Appendix mass/iatrogenic caecal injury	2(14.3%)
Wound infection	7(50%)
Wound dehiscence	3(21%)
Leakage of faeces around the tube	2(14.3%)
Faecal fistula	0
Tube dislodgment	0
Hospital stay	14-33days
Mortality	0

5. CONCLUSION

Tube interval appendicectomy, right hemicolectomy and ileostomy which are other options in the treatment of advanced appendicitis. In this study, there were neither a recorded mortality nor faecal fistula sequel; however, wound infection and wound breakdown were important findings.

The authors contend that tube-caecostomy is perhaps a worthwhile alternative in the surgical treatment of ruptured appendicitis, appendix abscess and gangrenous appendix when the development of a spontaneous faecal fistula and abscess formations are envisaged after performing a simple appendicectomy.

Future research should be directed towards carrying out a prospective study comparing the efficacy of tube-caecostomy with interval appendicectomy.

CONSENT

The authors declare that written informed consent was obtained from each patient before the procedures were performed.

ETHICAL APPROVAL

Necessary ethical approval was obtained by the authors from the ethical committee of the Edo State Hospitals Management Board.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Willmore WS, Hill AG. Acute appendicitis in a Kenyan rural hospital. *E Afr Med J.* 2001;78(7):355-357.
2. Jahanzaib H, Farhan Z, Tariq MK. Tube caecostomy in appendix mass or abscess: A review of 21 cases. *Pak J.* 2008; 24(4):240-242.
3. Muhammad S, Syed AH, Syed AI. Persistent appendiceal faecal fistula following a complicated open appendicectomy. *J Pak Med Assoc.* 2009; 59(3):181-3.
4. Bielecki K, Gajda A. The causes and prevention of anastomotic leak after colorectal surgery. *Klinicka Onkolgie-Zvladni Cislo.* 1999;25-30.
5. Caves PK, Crockard HA. Pseudo-Obstruction of the large bowel. *Bri Med J.* 1970;2:583-586.
6. Maurice K, Peter CB, James C, Jim T. *Primary surgery Vol 2-Trauma*; 2nd ad, Oxford. Univ. Press; 1990. ISBN: 9780192616944
7. Abas Mohamed. Faecal fistula, the most unfortunate sequelae of appendicectomy:

- Case report. The Internet Journal of Surgery. 2010;27(2).
8. Pierrier G, Peillon C, Liberge N, Steinmetz L, Boyet L, Testart J. Dis colon rectum. 2000;43(1):50-4.
 9. Aly Saber, Emad N, Okikam H. Efficacy of protective tube cecostomy after restorative resection for colorectal cancer: A randomized trial. International Journal of Surgery. 2013;11(4):350-352.
 10. Emilio E. Atlas of gastrointestinal surgery 1st ed. Baltimore, RR Donnelley & Sons Company; 1997.
 11. Syed AH, Manzar S. Tube caecostomy: A valuable procedure in the primary closure of right colonic gunshot injury. Pak J Surg. 1998;14(4):57-59.
 12. Joerg Tschelitsch, Heinz Wykypiel, Rupert Prommegger, Ernest Badner. Colostomy vs tube cecostomy for protection of a low anastomosis in rectal cancer. Arch Surg. 1999;134:1385-1388.
 13. Kaminski A, Liu IL, Applebaum H, Lee SL, Haigh PI. Routine interval appendectomy is not justified after initial nonoperative treatment of acute appendicitis. Arch of Surg. 2005;140(9):897-901.
 14. Abdul-Waheed M. Appendiceal mass: Is interval appendectomy "something of the past". World J Gastroenterol. 2011; 17(25):2977-2980.
 15. Lorraine C. Interval appendectomy after appendiceal mass or abscess in adults: what is "best practice"? Surgery Today. 2007;37(1):1-4.
 16. Massimo S. A focus on intra-abdominal infections. World Journal of Emergency Surgery. 2010;5:9.

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