

Our Experience with Little Hole Appendicectomy and Description of How We Do It

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ABSTRACT

Background: Appendicectomy is among the commonest performed surgery. Scarless or minimal scar is now sought by patients. The value of laparoscopic over open appendicectomy is not establish to draw definitive conclusions and generalization, unlike in cholecystectomy; with higher cost, three scars sites and longer operative time. Minimal access appendicectomy is performed via open surgery with only a scar and has been documented. Our technique is also a modified Lanz that places the skin incision 1.5cm medial to the anterior superior iliac spine which gets easily on to the caecum with limited obscured small bowel. The description of technique adds to medical literature and experience in homogenous black population which this paper addresses.

Objectives: To review our little hole open appendicectomy and describe how we do it. To serve as a teach-book for rising scarless surgery requests in our African setting, though not intended for apprentice surgeon.

Methodology: This is a retrospective study of little hole appendicectomies from 2000 -2010.

Result: Thirty nine (39) patients were reviewed,33 females (84.6%) and 6 males (15.38%). 4 patients had incision size 1 cm, 27 patient had 1.5 cm and 8 patients had incision of 2cm. The shortest operative time was 20 minutes and the longest was 55 minutes with a mean operative time of 27.9 minutes.

Conclusion: with appropriate patient selection, little hole open appendicectomy is effective and has a good outcome.

KEYWORDS: Appendicitis, Open appendicectomy, Little hole technique, Our experience.

Introduction

Appendicectomy is among the common surgeries performed¹⁻⁸ with minimal scar

now sought by patients. Laparoscopic surgery provides such with attendant cost² or open appendectomy using cosmetically appealing skin crease incision³. Laparoscopic surgery sets and a dedicated minimally invasive suites are expensive with conversion from traditional suite costing \$200,000 - \$400,000⁴. Appendix topography in black Kenyan's shows 48% of appendicular bases not along the spinoumbilical line, highlighting the significance in Africans, for surgeons to be mindful of such variations⁵. Our technique is performed by placing skin incision, 1.5cm medial to the anterior superior iliac spine that easily gets on the caecum.

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Methods

Informed consent(s) and ethical clearance was obtained from the University of Maiduguri in accordance with Helsinki declaration.

This is a retrospective prospective study of our little hole appendicectomies from 2000 - 2010.

Data of patients who had little hole appendicectomy at the University of Maiduguri Teaching Hospital were reviewed. Exclusion criteria: non established clinical diagnosis of appendicitis, palpable right iliac fossa mass/ appendix mass or abscess. Inclusion criteria: incision of 2cm or less in patient that had appendicectomy. Investigations carried out during workup include full blood count (FBC), abdominal ultrasound scan (USS), high vaginal swab (HVS), stool microscopy, culture and sensitivity (M/C/S) and Urine M/C/S

Description of Technique - How We Do It

Traditional Lanz incision (a skin crease

incision) involves citing the incision with the McBurney's point as a landmark. Ours is a modification of location and incision size but the skin crease incision is retained. The preoperative preparation is similar to routine conventional operative technique with the patient placed in supine position and draped under general anaesthesia. Surgical technique was standardized among surgeons.

Five (5) important aspect of technical consideration are the incision site, incision size, access manoeuvre, removing the appendix and closure.

Incision site - Incision site is 1-1.5 cm medial to the anterior superior iliac spine (Fig.). This enhances direct access over the caecum guiding to the appendix via the taenia.

Incision size - Averages 1.55cm. The picture in fig.1 was 1cm.

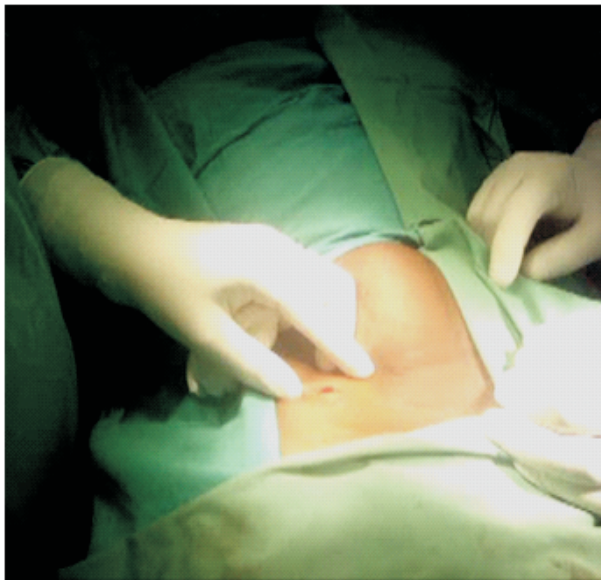


Fig.1: Our modified lanz Incision (1 cm wide), 1.5 cm medial

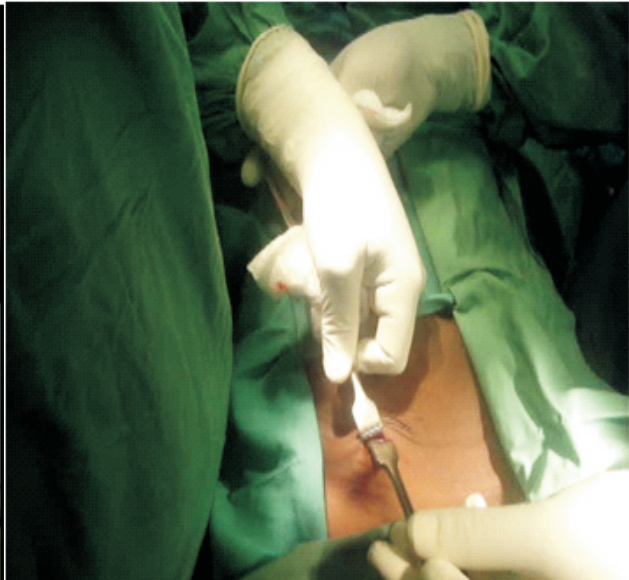


Fig. 2 : Langenbeck were snuggled into the little incision and to anterior superior iliac spine lifted to ensure access

Access Manoeuvr

Pair of small size langenbeck retractors were used to widen access.

- Retracting skin edge with Allis forceps
- Subcutaneous tissue is developed using curved scissors which exposes the muscle layer that are splitted using straight scissors exposing the underlying peritoneum.

One langenbeck is inserted at the side of the scissors, with the scissors removed, the second langenbeck is inserted, both aiding retraction shown in Fig.2

- Peritoneum is picked with mosquito or small artery forceps and opened using a knife or scissors as shown in Fig. 3.

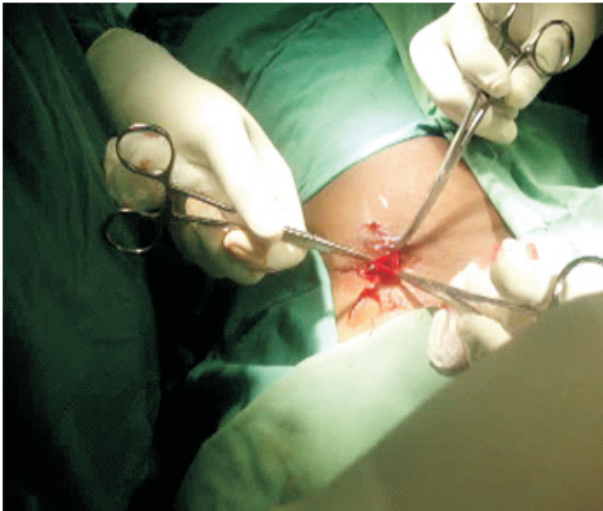


Fig.3: Showing the incised peritoneum edge held by three Artery forceps



Fig.4: Showing the appendix with its mesentery delivered

- Babcock forceps are inserted which falls directly on the caecum, held and brought out; exposing the portion of the taenia which guides to the base of the appendix that is subsequently delivered (Fig.4).

- Removing the appendix and closure- This is similar to normal conventional technique

with ligation of the appendicular artery and double ligation of the appendix stump which is then severed. Continuous closure of peritoneum with absorbable suture, muscle layer is closed and subcuticular closure of skin is done with nylon 3/0 (fig 5).



Fig.5: Subcuticular skin closure



Fig.6: showing absence of incision scar in one of our patient after 3 years

Results

Thirty nine (39) patients who had little hole appendicectomy in the institution were reviewed, 33 were females (84.6%) and 6

males (15.38%) (Table 1). Ages 20 – 29 years presented the most with 16 (41.06%) while the least age group seen is 1(2.56%) in 0 -9 years and 40 – 49 years respectively.

Table 1: Showing Age and sex distribution of patients who had little hole open appendic

Age (years)	Females (F)	Males (M)	Total
0 -9	0	1	1(2.56%)
10 – 19	14	1	15 (38.45%)
20-29	14	2	16 (41.06%)
30 – 39	5	1	6 (15.38%)
40 -49	0	1	1 (2.56%)
Total	33	6	39 (100%)

All 39 (100%) patients had right iliac fossa pain (Table 2), while vomiting was the most frequently associated feature with 10 (25.64%). Other associated symptoms include fever 9(23.07%), nausea, anorexia 1(2.56%) and diarrhea 1(2.56%). RIF tenderness was

the commonest elicited sign with 35(89.75%) while Guarding, Rovsing and Psoas accounted for 4(10.25%),1(2.56%)& 1(2.56%) respectively. None of our patients had rebound tenderness.

Table 2: Symptoms and signs in 39 black patients with little hole open appendicectomy

Symptoms	n=39 (%)	Signs	n=39(%)
RIF pain	39 (100%)	RIF tenderness	35(89.75%)
RIF pain + vomiting	10 (25.64)	LIF tenderness	0(0)
RIF pain + fever	9(23.07)	Guarding	4(10.25)
RIF pain + nausea	7 (17.94)	Rovsing	1(2.56)
RIF pain +fever + vomiting	4 (10.25)	Psoas	1(2.56)
RIF pain + nausea + vomiting	2 (5.12)	Rebound tenderness	0(0)
RIF pain + anorexia	1 (2.56)	0	0
RIF pain + diarrhoea	1 (2.56)	0	0

* RIF- Right iliac fossa ; LIF- Left iliac fossa

Table 3: Frequency of episode in patients with little hole open appendicectomy

Number of episodes	n=39	Percentage (%)
1 st episode	6	15.38%
2 nd episode	11	28.21%
3 rd episode	7	17.94%
4 th episode	0	0
Others (6 episodes	7	17.94%
Unspecified	8	20.51%



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Eleven (28.20%) patients presented with 2nd episode of symptoms at time of surgery, accounting for the most, 6 (15.38 %) presented with 1st episode of symptoms while 8 (20.51%) were unspecified (Table 3).

Five (5) patients, all females had abdominal ultrasound scan (USS) during workup, while high vaginal swap (HVS) and stool microscopy, culture and sensitivity (M/C/S) were done in 1 patient respectively, revealing normal culture. Urine M/C/S was done in 5 patients and one was confirmed with pyelonephritis.

Four (4) patients had incision size 1 cm, 27 patients had 1.5 cm incision and 8 patients

had incision of 2cm (Table 4). However, a patient (2.56%) had conversion via hockey stick incision for a higher placed appendix and accounted for the longest operative time of 55 min. The shortest operative time was 20 min, while the mean operative time was 27.9 min. Duration of hospital stay on average was 72hrs. Complication of wound sepsis was seen in one (1) patient and was managed conservatively. First initial follow up was at 7 to 10 days after discharge and subsequent follow ups were at 6 month, 12 months with longest at 3 years seen in fig.6, showing absence of incision scar.

Table 4: Incision size of 39 patients with little hole open appendicectomy

Incision size	N=39	Conversion
1cm	4 (5.12%)	0
1.5cm	27 (69.23%)	0
2cm	8 (20.51%)	Hockey stick 1 (2.56%)

Discussion

Minimally invasive suites (MIS) may reduce preparation time and clean up time, prosper a small incision and short hospital stay, in most cases the number of such small incisions are not less than two (2)²⁴.

However, little hole appendicectomy performed via open surgery has only a scar but the difference in duration of both can be longer than the conventional open appendicectomy. With Africans having a higher propensity for keloid formation, single incision has advantage over multiple laparoscopic incisions. The later is contested by our little hole open appendicectomy since it shares most of the advantages of laparoscopic surgery and matched similar cost implication with conventional open appendicectomy at about \$300 in our centre.

As discussed in their article on “surface map” of the appendix, open appendicectomy is mainly for economy of hospitals while laparoscopic appendicectomy is more for the economy of patient from decision analysis studies⁸.

Kathhouda et al⁹ in their prospective randomized study comparing open vs laparoscopic appendicectomy in 247 patients revealed a longer operation time of 80 min vs 60 min; p=0.000 respectively. Our experience had a mean operation time of 27.9 min. The value of laparoscopic appendicectomy is not established to draw definitive conclusions and generalization unlike other organs like in cholecystectomy⁹.

In their study of complicated appendicitis,



Garg et al⁷ found that laparoscopic appendicectomy took 98 min compared with 72min for open appendicectomy, while the median hospital stays were 3 days and 6 days respectively. Most of our patients were discharged after 48 hrs. Malik et al⁶ noticed that their small access appendicectomy took 40% (15min) longer than conventional appendicectomy.

Evidence has shown some discrepancies between the Mc Burney's point and actual anatomical location of the appendix^{3,5,6,8}, The topography of the appendix in blacks has been studied by Mwachaka⁵ in Kenya, were findings revealed 29.2% of appendices lie above and medial to the Mc Burney's point; 52.1% lie along the spinoumbilical line; while 18.8% lie below and medial to it which highlights the significance in Africans for surgeons to be mindful of such variations for better outcomes.

Others have reported that the appendix is located superior to the Mc Burney's point in 51-75% of cases with the umbilicus of obese patients in western nations noticed to have significant descend³.

Our little experience in 39 patients has shown that a little hole incision of mean size of 1.55 cm was complimented by the technical consideration of the unconventional position of the incision - "at 1-1.5cm medial to the right anterior superior iliac spine.

This position aided easy access to the caecum and the obscure of the small bowel is minimized hence hastening the operating time.

Our modification of the lanz incision (both by incision size and site) which traditionally extends 5-7cm from a point 2cm above and medial to the right anterior superior iliac spine, while traditional Grid iron incision is about 5-8cm. O'Neil and Adranbi³ reported their modification by placing the incision 1cm

higher than that of the traditional lanz (site). Malik et al⁶ described a small lateral access (1.5cm-2cm) of a modified lanz in children, smaller than the conventional or traditional appendicectomy (4 - 6 cm) but their small incision was made just lateral to the McBurney's point using it normal landmark along the spinoumbilical line in contrast to ours that we find less obscured by the small bowel.

Others reported open appendicectomy incision of about 1.5 inch, while laparoscopic appendicectomy was done with 3 incisions for the ports, with the laparoscope positioned at the umbilicus while the 1 cm ports are inserted at the left and right lower abdominal quadrants⁹. A pertinent issue in appendix surgery is the position of the base which has been used as a pointer or reference point to skin incision.

The Mc Burneys point was named after Charles McBurney who described the point of maximum tenderness and clinical manifestations¹.

Described in 1889³ it's the anatomic landmark of the appendix and lies at the junction between the lateral third and medial 2/3rd of a line joining the anterior superior iliac spine and the umbilicus; referred to as the spinoumbilical line^{1,3,5,8}.

Geographic and ethnic variation in the anatomy is documented and may lead to extension of transverse incisions or additional muscle splitting during surgery, with its attendant longer operation time and clumsy cosmesis⁵.

Our longest operating time of 55 min was witnessed in 1 patient (2.56%) with extended hockey stick incision for a higher placed appendix. Mobility of the appendix is vested on its mesentery making it easy to be delivered during surgery; however retrocaecal location can make it technically



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impossible as reported at 2%⁶. Pitfall is never to pull much of the caecum out at a time.

Position of appendix and 'surface mapping' shows variation. Ghonge et al⁸ reported a significant variation in the location of the appendix base with 89% cranial deviation and 64.8% medial deviation using multi detector CT (MDCT) in a prospective study of 74 patients. Ghonge et al⁸ revealed the sensitivity and specificity of effectively diagnosing acute appendicitis as 87-100% and 89-99% respectively using MDCT. Imaging may increase the reliability of diagnosis, 5 patients had abdominal USS during workup that excluded gynaecological differentials and is cheaper, however CT scan can be done, though not cheap and its accuracy in acute appendicitis is partially due to its ability to reveal a normal appendix¹⁰. In 275 double contrast barium studies 35% and 15% of appendices lie within 5cm and greater than 10cm distal from where McBurney's point is^{8&11}.

Limitations of our study is that Alvarado

scoring were not employed for children as this may curtail negative appendicectomy but was not seen in our four (4) paediatric patients. This paper shares light on how we do it and is a source of education for training.

Conclusion

A single little hole incision is preferred by patient's due to its minimal, to near absent scar that can compare more favourably over 3 incisions for laparoscopic approach. Our incision, just medial to the right anterior superior iliac spine, we believe, hasten access and delivery of the appendix and may have accounted for our shorter operation time. Twenty seven (27) patients had 1.5 cm incision. The variation of the appendix bases should warrant African surgeons to err with caution and not always align with the dogma of the McBurney's point as found in Caucasian literature but more studies are required. Preponderance of females 33 (84.6%) seen in our study confirms their appeal and consciousness to avoid scars.

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