

ACUTE APPENDICITIS IN AN INGUINAL HERNIA SAC: A VARIANT OF AMYAND'S HERNIA.

Igwe PO, Ray-Offor E. Aniebo CC.

Department of Surgery, University of Port Harcourt Teaching Hospital Alakabia, Rivers State, Nigeria.

Correspondence: igwe_patrick@yahoo.com.

ABSTRACT

Background: Amyand's hernia; a rare form of inguinal hernia is the presence of a vermiform appendix in inguinal hernia sac. It is often misdiagnosed as an incarcerated or strangulated hernia. The rarity of this condition is to be emphasized as well as review of literature.

Aim: This is to report a case of an inflamed appendix in an inguinal hernia sac.

Summary: A 29 year old male student, who was referred from a peripheral centre with right inguinoscrotal swelling of 14 years duration and severe persistent pain of four hours duration prior to presentation. He had repeated vomiting of recently ingested meal. There was constipation and no abdominal distension. The working diagnosis was dynamic intestinal obstruction from strangulated right inguinoscrotal hernia. He had emergency inguinoscrotal exploratory following resuscitation. The findings were: Inflamed vermiform appendix measuring about 15 cm in length and part of viable terminal ileum in the hernia sac. Appendicectomy and herniorrhaphy were done. His out-patient follow-up was been uneventful.

Conclusion: Acute appendicitis could have a variety of presentation, likewise inguinoscrotal hernia. In an extremely rare form, inflamed appendix could be a content of an inguinal hernia sac.

Key words: Hernia, Acute Appendicitis, Amyands.

INTRODUCTION:

Inguinal hernia is one of the most common operations done. About 1% of these operative findings contain appendix in a hernia sac. Amyand's hernia; a rare form of inguinal hernia is the presence of a vermiform appendix in inguinal hernia sac. It is often misdiagnosed as an incarcerated or strangulated hernia and delayed mesh repair is a better surgical option in perforated appendix cases.

CASE REPORT:

A 29 year old male student, who was referred from a peripheral centre with right inguinoscrotal swelling of 14 years duration and severe constant pain of four hours duration prior to presentation. He had repeated vomiting of recently ingested meal. There was constipation and no abdominal distension. Patient had similar occurrence of pain 3 days prior to presentation but symptoms resolved spontaneously after hours of lying down. Swelling of the right groin started 14 years prior to presentation. Swelling was intermittent at first, spontaneously reducing, then sometimes with manual reduction by patient, associated with mild pain which relieves at rest. No history of chronic cough, drenching

night sweats, fever, weight loss, difficulty in passing urine or other urinary symptoms. There is a positive history of lifting heavy objects. No history of swelling on any other part of the body. At onset of symptoms he presented to a medical centre from where he was referred to University of Port Harcourt Teaching Hospital (UPTH). Past medical and surgical history were not contributory. No history of drug allergy. Second in a family of 8 children. 3 boys and 5 girls in a monogamous setting. Takes alcohol (about 2 bottles of star a day, but does not take any tobacco products).

Clinical examination revealed he was a youngman in mild painful distress, drowsy, not pale, afebrile, anicteric, acyanosed, not dehydrated, no pedal oedema. Pulse rate was 78 beats per minute, blood pressure was 130/70 mmHg, only first and second heart sounds were heard, respiratory rate was 24 cycles/minute, and breath sounds were vesicular. Abdomen was Flat, soft, moved with respiration, the liver and spleen were not palpable and kidneys were non ballotable. Bowel sounds were hyperactive. Right groin swelling (huge) was tender, soft, not fluctuant. The Mass is separate from testes and one could not get above it, nor could it be reduced.

Rectal examination revealed normal findings.

Diagnosis of Obstructed right inguinoscrotal hernia possible strangulation was made. He was placed on nil per os, intravenous fluids, antibiotics and analgesics. The investigation and results were as follows: Packed cell volume was 36%, serology was negative for HIV I and II, Na was 137 mmol/L, K was 3.4 mmol/L, HCO₃ was 24 mmol/L, Urea was 1.9 mmol/L and Creatinine was 1.5 mg/dl. Urinalysis showed glucose was 2+.

He had emergency inguinoscrotal exploration following resuscitation. The findings were: serosanguinous exudate, inflamed vermiform appendix (acute appendicitis complicating hernia) measuring about 15 cm in length and part of viable terminal ileum in the hernia sac (Fig 1-5). Appendicectomy and herniorrhaphy were done. Posterior wall repair was done using nylon darn. Histology result showed inflamed appendix. His out-patient follow-up was uneventful.

DISCUSSION:

Amyand's hernia is difficult to diagnose pre-operatively. The management is also not straightforward in most cases. This condition has been reported by some authors. Bhide in United Kingdom reported a case of Amyand's hernia in a 2 years old boy who presented with septic shock. Logan et al in Columbia, United States of America (USA), reported a case of incarcerated and perforated appendix within an inguinal hernia. They also recommended that repair should be undertaken without the use of synthetic mesh through a preperitoneal incision that gives access to the inguinal regions. In our case, the repair was done using nylon darn through a groin crease incision. Kaymakci et al in Istanbul, Turkey, reported a retrospective analysis of 30 patients aged between 19 days and 8 years with an Amyand's hernia operated in their institution from 1998 to 2009. In their study, hernia repair without an appendicectomy was

performed in patients with normal appendix. Also, emergency appendicectomy through herniotomy was performed in cases of inflamed and perforated appendices.

Cankorkmaz et al reported also in a retrospective analysis study in Sivas Turkey, between 1998 and 2006, showed the management of 564 patients with acute appendicitis, 1090 patients with inguinal hernia, 33 patients with incarcerated inguinal hernia and 12 patients with Amyand's hernia in paediatric surgery service. They found that all patients with Amyand's hernia were boys with a median age of 40 days. Findings intraoperatively included 2 normal appendices, 6 inflamed appendices, and 4 appendices with external signs of serosal inflammation of uncertain significance in the inguinal hernia sac. Two patients with a normal appendix had hernia repair without an appendicectomy.

The other 10 patients with an abnormal appendix underwent an emergency open appendicectomy with repair of the inguinal hernia. They also found none of the patients developed recurrence within a median postoperative follow-up of 2.5 years. In a retrospective study done by Sharma et al in Merseyside, UK, out of 18 consecutive patients with Amyand's hernia from 1991 to 2005, 17 were men only 1 was a woman. Their median age was 42 years. None was diagnosed preoperatively.

They concluded that inflammatory status of the appendix determines the type of hernia repair and the surgical approach. Incidental appendicectomy is not favoured. Park et al in New York, USA reported incarcerated Amyand's hernia in a premature infant associated with circumcision. Zaharie et al in Romania, reported perforated appendix with peri-appendicular abscess in an inguinal sac in an 81 year old patient. Bassini's procedure was the method for repair of the hernia.



Fig 1 Inflamed appendix in an inguinal hernia sac.



Fig 2 Inflamed appendix in an inguinal hernia sac.

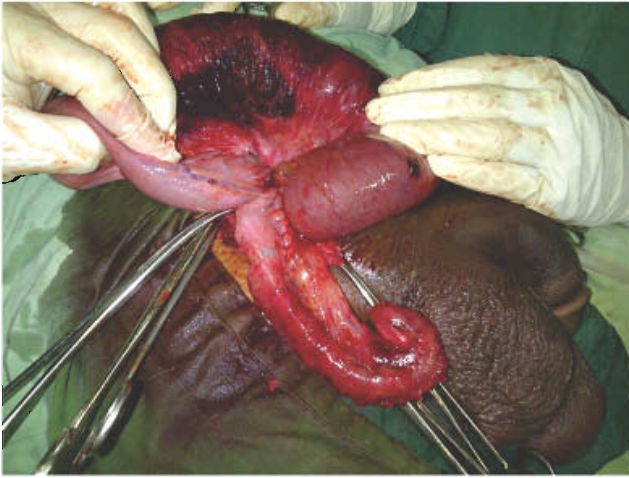


Fig 3. Inflamed appendix in an inguinal hernia sac.



Fig 4. Inflamed appendix in an inguinal hernia sac



Fig 5 Inflamed appendix in an inguinal hernia sac.

CONCLUSION:

Acute appendicitis could have a variety of presentation, likewise inguinoscrotal hernia. In an extremely rare form, inflamed appendix could be a content of an inguinal hernia sac as seen in index case.

REFERENCES

1. Cooper, A. & O'Flynn, N. Risk assessment and lipid modification for primary and secondary prevention of cardiovascular disease: summary of NICE guidance. *British Medical Journal*, 2008; 336(7655):1246-1248.
2. Grundy, S. M., Benjamin, I. J., Burke, G. L., Chait, A., Eckel, R. H., Howard, B. V., Mitch, W., Smith Jr, S. C. & Sowers, J. R. Diabetes and cardiovascular disease: a statement for healthcare professionals from the American Heart Association. *Circulation* 1999;100 (10): 1134-1146.

3. Mukadas AO, Misbau U. Incidence and patterns of cardiovascular disease in northwestern Nigeria. *Niger Med J* 2009;50:55-7
4. Nwaneli C.U. Changing Trend in Coronary Heart Disease in Nigeria. *Afrimedical Journal* 2010; 1(1): 1-4
5. Relationship between low-density lipoprotein particle size, plasma lipoproteins, and progression of coronary artery disease: the Diabetes Atherosclerosis Intervention Study (DAIS) [published online ahead of print March 4, 2003]. *Circulation*. 2003;107:1733-1737.
6. International Diabetes Federation, 2012. Clinical Guidelines Taskforce. Global Guidelines for Type 2 Diabetes. available at www.idf.org. Accessed April 10, 2013
7. Kannel WB (1985) Lipids, diabetes, and coronary heart disease: insights from the Framingham Study. *Am Heart J*110: 1100–1107
8. U.K. Prospective Diabetes Study 27 Plasma lipids and lipoproteins at diagnosis of NIDDM by age and sex. *Diabetes Care*1997; 20:1683–1687
9. Agaba IE, Anteyi EA, Puepet FH, Omodu PA, Idoko JA. The clinical pattern of diabetic nephropathy in type 2 diabetes mellitus in North Central Nigeria. *Journal of Med Tropics* 2002;4:10.
10. Idogun ES, Unuigbo EI, Ogunro PS, Akinola OT, Famodu AA. Assessment of serum lipids in Nigerians with type 2 diabetes mellitus complications. *Pak J Med Sci* 2007;23:708-12.
11. Okafor CI, Fasanmade OA, Oke DA. Pattern of dyslipidaemia among Nigerians with type 2 diabetes mellitus. *Nig J Clin Pract* 2008;11:25-31
12. Ogbera AO, Fasanmade OA, Chinenye S, Akinlade A. Characterization of lipid parameters in diabetes

- mellitus-a Nigerian report. *Int Arch Med* 2009;2:19.
13. Cheung AK, Parker CJ, Ren K, Iverius PH. Increased lipase inhibition in uremia: identification of pre-beta-HDL as a major inhibitor in normal and uremic plasma. *Kidney Int.* 1996;49:1360–71.
 14. Wokoma FS, Unachukwu C, Emem-Chioma P, Alasia DD. Lipid profiles of type 2 diabetic adult Nigerians. *Port Harcourt Medical Journal* 2009; 3:191-198.
 15. Morrish, N., Wang, S. L., Stevens, L., Fuller, J. & Keen, H. Mortality and causes of death in the WHO Multinational Study of Vascular Disease in Diabetes. *Diabetologia* 2001;44: 14-21.
 16. Unachukwu CN, Uchenna DI, Young E. Mortality among Diabetes In-Patients in Port-Harcourt, Nigeria. *African Journal of Endocrinology and Metabolism* 2008; 7(1):1-4.
 17. Haffner SM, Lehto S, Rönnemaa T, Pyörälä K, Laakso M. Mortality from CHD in subjects with type 2 diabetes and in nondiabetic subjects with and without prior myocardial infarction. *N Engl J Med.* 1998;339:229-234.
 18. Taskinen MR. Diabetic dyslipidaemia: from basic research to clinical practice. *Diabetologia* 2003;46: 733–749
 19. Marfella, R., D'Amico, M., Esposito, K., Baldi, A., Di Filippo, C., Siniscalchi, M., Sasso, F. C., Portoghesi, M., Cirillo, F. & Cacciapuoti, F. The Ubiquitin-Proteasome System and Inflammatory Activity in Diabetic Atherosclerotic Plaques Effects of Rosiglitazone Treatment. *Diabetes* 2006;55 (3): 622-632.
 20. Chahil TJ and Ginsberg HN. Diabetic dyslipidemia. *Endocrinol Metab Clin North Am*2006; 35: 491–510
 21. Adiels M et al. Acute suppression of VLDL1 secretion rate by insulin is associated with hepatic fat content and insulin resistance. *Diabetologia*2007; 50: 2356–2365
 22. Mooradian AD et al. Obesity-related changes in high density lipoprotein metabolism. *Obesity* 2008; 16: 1152–1160
 23. Mooradian AD et al. Transcriptional control of apolipoprotein A-I gene expression in diabetes mellitus. *Diabetes* 2004; 53:942-945.
 24. Arshag D Mooradian. Dyslipidemia in type 2 diabetes mellitus
 25. *Nature Clinical Practice Endocrinology & Metabolism* 2009;5:150-159.
 26. Expert panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). *JAMA* 2001; 285: 2486–2497.
 27. Kelly Anne Spratt, DO. Managing Diabetic Dyslipidemia: Aggressive Approach *J Am Osteopath Assoc* 2009; 109:S2-S7
 28. LaRosa JC, Grundy SM, Waters DD, et al, For the Treating to New Targets (TNT) investigators. Intensive lipid lowering with atorvastatin in patients with stable coronary disease. *N Engl J Med.* 2005;352:1425–1435.
 29. Enkanen L, Mäntiäri M, Kovanen PT, Virkkunen HM, Manninen V. Gemfibrozil in the treatment of dyslipidemia. An 18-year mortality follow-up of the Helsinki Heart Study. *Arch Intern Med.* 2006; 166:743-748.
 30. Keech A. Simes RJ, Barter P, Best J, Scott R, Taskinen MR, et al; FIELD study investigators. Effects of long-term fenofibrate therapy on cardiovascular events in 9795 people with type 2 diabetes mellitus (the FIELD study): randomised controlled trial [published corrections appear in *Lancet.* 2006; 368:1415; 2006;368:1420]. *Lancet.* 2005;366:1849-1861.
 31. May HT, Anderson JL, Pearson RR, Jensen JR, Horne BD, Lavasani F, et al. Comparison of effects of simvastatin alone versus fenofibrate alone versus simvastatin plus fenofibrate on lipoprotein sub-particle profiles in diabetic patients with mixed dyslipidemia (from the Diabetes and Combined Lipid Therapy Regimen study [published online ahead of print December 26, 2007]. *Am J Cardiol.* 2008;101:486-489.
 32. National Vascular Disease Prevention Alliance. Evidence-based practice guidelines for the assessment of absolute cardiovascular disease risk. Canberra: NHMRC; 2009.
 33. Ranganathan G, Kouchupapy R, Dias S. An approach to the management of Amyand's hernia and presentation of an interesting case report. *Hernia.* 2011; 15: 79-82.
 34. Bhide SS. Amyand's hernia. *Indian J Pediatr.* 2009; 76: 854-855
 35. Logan MT, Nottingham JM. Amyand's hernia: a case report of an incarcerated and perforated appendix within an inguinal hernia and review of the literature. *Am Surg* 2001; 67: 628-629.

36. Kaymakci A, Akillioglu I, Akkoyun I, Guven S, Ozodemir A, Gulen S. *Hernia* 2009; 13: 609-612.
37. Cankorkmaz L, Ozer H, Guney C, Atalar MH, Arslan MS, Koyluoglu G. Amyand's hernia in children: a center experience. *Surgery* 2010; 147: 140-143.
38. Sharma H, Gupta A, Shekhawat NS, Memon B, Memon MA. Amyand's hernia: a report of 18 consecutive patients over a 15 year period. *Hernia*. 2007; 11: 31-35.
39. Park J, Hemani M, Milla SS, Rivera R, Nadler E, Alukal JP. Incarcerated Amyand's hernia in a premature infant associated with circumcision: a case report and literature review. *Hernia*. 2010; 14: 639-642.
407. Zaharie F, Tomus C, Mocan L, Bartos D, Zaharie R, Iancu C. Perforated appendix with periappendicular abscess in a inguinal hernia sac: Amyand's hernia. *Chirurgia (Bucur)*. 2012; 107:521-523.