



Contents lists available at ScienceDirect

## International Journal of Surgery Case Reports

journal homepage: [www.casereports.com](http://www.casereports.com)

# Intrasaccular caecal adenocarcinoma presenting as enlarging right inguinoscrotal hernia



Max Marsden<sup>a</sup>, Nathan Curtis<sup>a</sup>, Shaun McGee<sup>b</sup>, Emma Bracey<sup>a</sup>,  
Graham Branagan<sup>a</sup>, Simon Sleight<sup>a,\*</sup>

<sup>a</sup> Department of Colorectal Surgery, Salisbury District Hospital, Odstock Road, Salisbury, Wilts SP2 8BJ, UK

<sup>b</sup> Department of Radiology, Salisbury District Hospital, Odstock Road, Salisbury, Wilts SP2 8BJ, UK

## ARTICLE INFO

## Article history:

Received 10 March 2014

Received in revised form 24 June 2014

Accepted 14 July 2014

Available online 12 August 2014

## Keywords:

Colorectal cancer

Caecal adenocarcinoma

Computer tomography colonography

Inguinal hernia

## ABSTRACT

**INTRODUCTION:** Colorectal cancer and inguinal hernias are both common surgical pathologies in the elderly but rarely co-exist. Where the conditions overlap, there can be difficulties in both diagnosis and treatment.

**PRESENTATION OF CASE:** A 78 year old man with unexplained iron deficiency anaemia was investigated for gastrointestinal cancer. He was found to have enlarging bilateral inguinoscrotal hernias. CT colonoscopy revealed a herniated caecal carcinoma contained within the scrotum. An open excision was performed.

**DISCUSSION:** Iron deficiency anaemia without obvious bleeding is associated with colorectal cancer and should be thoroughly investigated. Asymptomatic inguinal hernias are often ignored by patients. However, a change in an existing hernia may be associated with neoplasia.

**CONCLUSION:** Dual pathology raises new difficulties in assessment, investigation and management of colorectal cancer.

© 2014 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

## 1. Introduction

Approximately 20% of the 36,000 new colorectal cancer cases each year in the UK arise from the caecum. Inguinal hernias are also common presenting or incidental problems seen by colorectal surgeons. We present a case illustrating the diagnostic and treatment difficulties that arise when these two common conditions co-exist.

## 2. Presentation of case

A 78 year old man was referred to surgical outpatients with a hypochromic, microcytic anaemia (Hb 7.4 g/dL<sup>-1</sup> MCV 68 fL, ferritin 8 µg/L<sup>-1</sup>) of unknown cause having initially presented with fatigue. Detailed history revealed no gastrointestinal symptoms or risk factors for iron deficiency. He also reported longstanding bilateral asymptomatic groin hernias. On examination, the patient was pale and noted to be tachypnoeic and tachycardic at rest. Kolonychia and pallor of the mucosal membranes was noted. Two large non-tender indirect inguinoscrotal hernias were present. The right side was only partially reducible (Fig. 1). There were no other abnormal clinical findings on examination.

Subsequent gastroscopy and duodenal biopsy were normal. Colonoscopy was technically difficult and abandoned after reaching

the ascending colon. At this point, the colonoscope light was seen within the right hemiscrotum. No bowel lesions were visually identified to this point. To evaluate the non visualised proximal colon, CT colonography was performed showing a large right sliding inguinoscrotal hernia containing a caecal tumour and a large inguinoscrotal hernia containing loops of small bowel (Fig. 2). Completion of staging with standard contrast enhanced CT of the thorax, abdomen and pelvis showed a number of bulky mixed attenuation lymph nodes, suspicious for involvement with tumour extending from the right groin proximally along the ileocolic vascular arcade for 12 cm (Fig. 3). There was no evidence of distant metastatic disease.

A laparoscopic right hemi-colectomy was planned with curative intent. Intra-operatively, the left sided hernia was reduced but the right side was irreducible. Open conversion was performed using an oblique right groin incision. The tumour was found to be adherent to the peritoneal sac preventing reduction. The ileum and colon were divided following ligation and division of the ileocolic vessels. A further transverse scrotal incision was made directly over the tumour mass. This facilitated enbloc dissection of the caecal tumour, peritoneal sac and adherent testicle. A stapled ileo-colic anastomosis was performed and a Shouldice hernia repair undertaken.

Histological examination of the specimen revealed a 70 mm moderately differentiated adenocarcinoma with 9 of 20 resected lymph nodes containing metastases including the apical node (Fig. 4). TNM5 staging: pT3N2M0 R0. The patient had an uncomplicated post operative recovery, returning home on day seven.

\* Corresponding author. Tel.: +44 1722 336262.

E-mail address: [simon.sleight@salisbury.nhs.uk](mailto:simon.sleight@salisbury.nhs.uk) (S. Sleight).



Fig. 1. Pre operative appearance.

Subsequently, he completed six cycles of Capecitabine adjuvant chemotherapy.

At one year follow up, the patient remains well with a performance status of one, good weight gain and no clinical or radiological evidence of metastases or hernia recurrence.

3. Discussion

The UK, National Institute for Clinical Excellence guidelines recommend urgent referral for men of any age with unexplained iron-deficiency anaemia (IDA).<sup>1</sup> This recommendation is based on the knowledge that IDA without evidence of obvious bleeding is a feature of colorectal or oesophagogastric cancer and is especially suggestive of caecal tumours. Hamilton calculated the likelihood ratio of having colorectal cancer in men with unexplained anaemia <9 g/dl<sup>-1</sup> to be 27.<sup>2</sup>

Malignant tumours presenting within hernias are rare. Historically, microscopic evidence of neoplasia was found in fewer than 0.4% of excised hernia tissue.<sup>3</sup> They can be classified based on the tumour's relation to the hernial sac as intra-saccular, saccular or extrasaccular. Intrasaccular are primary tumours arising within the



Fig. 3. Coronal CT demonstrating the lymphednopathy along the ileocolic vascular arcade.

herniated viscera. Saccular tumours involve the peritoneum and can be primary such as mesothelioma or metastatic deposits.

Many asymptomatic inguinal hernias are ignored by patients and can be present for many years. As many as a fifth of all male patients with colorectal cancer have concurrent inguinal hernia or have had a repair of an inguinal hernia 1–2 years prior to cancer diagnosis.<sup>4</sup> A prospective case control study found no association between inguinal hernia and colonic cancer.<sup>5–7</sup> Most reported cases of intrasaccular tumours are sigmoid cancers within sliding left indirect inguinal hernias which often become incarcerated.<sup>8–10</sup> They can be found by surprise or even mis-diagnosed during routine



Fig. 2. CT colonoscopy showing a large caecal tumour lying in right hemi scrotum (large arrow) together with a left sided scrotal hernia containing normal loops of small bowel (arrowhead).



Fig. 4. Pathological specimen demonstrating relation of tumour to testicle.

hernia repair or present as an emergency which risks suboptimal treatment.

To date, treatment of intrasacral cancer has not been standardised and optimal surgical management of intrascrotal colonic cancer is unclear. Surgical approach will vary depending on anatomy and surgical findings. In our case, the tumour was adherent and irreducible necessitating a scrotal incision to allow enbloc dissection. Twenty lymph nodes were harvested suggesting acceptable mesentery resection, pathological staging and overall compatibility with surgical oncology principles.

The use of mesh in the primary repair of an inguinal hernia reduces the incidence of recurrence.<sup>11,12</sup> However, in the context of bowel resection there is a contaminated surgical field which risks infection of the mesh. Combined with the risk of tumour seeding and local recurrence we performed a Shouldice repair. A Cochrane review found Shouldice type repairs to be superior to other non mesh open inguinal hernia repair techniques.<sup>13</sup> The chance of hernia recurrence is increased in this case due to the size of the hernia and damage of the inguinal fascia transversalis by surgical resection.

To our knowledge, there are no reports of trans-scrotal colonic resection and only two case reports of laparoscopic resection of intrasacral tumours.<sup>14,15</sup> In locally advanced tumours, manual or surgical reduction carries a theoretical risk of tumour cell implantation in the inguinal canal and peritoneal cavity.

#### 4. Conclusion

In clinical suspicion of an intra-abdominal tumour, changes in hernias should be awarded due attention and a thorough investigation for neoplasia undertaken.

Herniated cancers present new challenges to diagnosis and successful oncological resection.

#### Conflict of interest

None declared.

#### Funding

None.

#### Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Author contributions

All authors were involved in the care of the patient. MM and SM created the figures. NC created the manuscript which was critically revised by all authors.

#### Key learning points

- Large hernias can alter presentation.
- Intrasacral tumours may impact upon standard investigations.
- Surgical strategy must be adapted when resecting herniated tumours or viscera.

#### References

1. Clinical Guideline 27 Referral guidelines for suspected cancer. National Institute for Health and Clinical Excellence 2014 [cited 12.07.2014]; Available from: <http://guidance.nice.org.uk/CG27/NICEGuidance/pdf/English>
2. Hamilton W, Lancashire R, Sharp D, Peters TJ, Cheng KK, Marshall T. The importance of anaemia in diagnosing colorectal cancer: a case-control study using electronic primary care records. *Br J Cancer* 2008;**98**(2):323–7.
3. Yoell JH. Surprises in hernial sacs; diagnosis of tumors by microscopic examination. *Calif Med* 1959;**91**:146–8.
4. Slater R, Amatya U, Shorthouse AJ. Colonic carcinoma presenting as strangulated inguinal hernia: report of two cases and review of the literature. *Tech Coloproctol* 2008;**12**(3):255–8.
5. Avidan B, Sonnenberg A, Bhatia H, Aranha G, Schnell TG, Sontag SJ. Inguinal hernia is not a sign of colon cancer: results of a prospective screening trial. *Aliment Pharmacol Ther* 2002;**16**(6):1197–201.
6. Gerson LB, Triadafilopoulos G. Is colorectal cancer screening necessary in the preoperative assessment of inguinal herniorrhaphy? A case-control study. *Am J Gastroenterol* 2001;**96**(6):1914–7.
7. Avidan B, Bardan E, Lang A, Fidler HH, Chowder Y, Bar-Meir S. Colorectal cancer screening in patients presenting with an inguinal hernia: is it necessary? *Gastrointest Endosc* 2004;**59**(3):369–73.
8. Bunting D, Harshen R, Ravichandra M, Ridings P. Unusual diagnoses presenting as incarcerated inguinal hernia: a case report and review of the literature. *Int J Clin Pract* 2006;**60**(12):1681–2.
9. Kouraklis G, Kouskos E, Glinavou A, Raftopoulos J, Karatzas G. Perforated carcinoma of the sigmoid colon in an incarcerated inguinal hernia: report of a case. *Surg Today* 2003;**33**(9):707–8.
10. Ruiz-Tovar J, Ripalda E, Beni R, Nistal J, Monroy C, Carda P. Carcinoma of the sigmoid colon in an incarcerated inguinal hernia. *Can J Surg* 2009;**52**(2):E31–2.
11. Scott NW, McCormack K, Graham P, Go PM, Ross SJ, Grant AM. Open mesh versus non-mesh for repair of femoral and inguinal hernia. *Cochrane Database Syst Rev* 2002;(4):CD002197.
12. Vrijland WW, van den Tol MP, Luijendijk RW, Hop WC, Busschbach JJ, de Lange DC, et al. Randomized clinical trial of non-mesh versus mesh repair of primary inguinal hernia. *Br J Surg* 2002;**89**(3):293–7.
13. Amato B, Moja L, Panico S, Persico G, Rispoli C, Rocco N, et al. Shouldice technique versus other open techniques for inguinal hernia repair. *Cochrane Database Syst Rev* 2012;**4**:CD001543.
14. Pernazza G, Monsellato I, Alfano G, Bascone B, Felicioni F, Ferrari R, et al. Laparoscopic treatment of a carcinoma of the cecum incarcerated in a right groin hernia: report of a case. *Surg Today* 2011;**41**(3):422–5.
15. Kanemura T, Takeno A, Tamura S, Okishiro M, Nakahira S, Suzuki R, et al. Elective laparoscopic surgery for sigmoid colon carcinoma incarcerated within an inguinal hernia: report of a case. *Surg Today* 2014;**44**(7):1375–9.

#### Open Access

This article is published Open Access at [scimedirect.com](http://scimedirect.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.