

# A case of sperm cell granuloma presenting as a peritoneal nodule

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## Abstract

An incidental peritoneal nodule was noted intraoperatively when a man in his 30s was undergoing a reversal of a colostomy procedure. The peritoneal nodule macroscopically comprised a fibro-fatty piece of tissue and histologically demonstrated mature spermatozoa with surrounding histiocytic reaction. A diagnosis of sperm granuloma was made. Sperm granuloma typically occurs in the epididymis following damage to vas deferens. The peritoneal site is very rare and thus can be mistaken for a neoplastic process.

**Keywords** Histiocytes; peritoneum; spermatozoa; vas deferens; vasitis nodosa

## Case report

A man in his 30s underwent a reversal of a colostomy procedure. The original surgery was performed two years prior when he had presented with a perforated sigmoid colon as the result of a localized inflammatory process. The underlying aetiology was uncertain but it was judged most likely to be from a complicated diverticular disease. There is no past medical history of any surgical procedures. During the reversal of the colostomy which was sited in the left iliac fossa, the patient was noted to have a peritoneal nodule in the right iliac fossa. It had been resected and sent for histological assessment. The rest of the laparotomy did not have unexpected findings.

The peritoneal nodule was macroscopically described as a piece of fibro-fatty tissue which measured 12 mm in diameter. The histology demonstrated fibroadipose tissue and a thick-walled tubular structure resembling vas deferens or blood vessel, arranged in a longitudinal section which contained a population of small-sized cells with hyperchromatic round-to-oval nuclei and scanty cytoplasm which were recognized to be mature spermatozoa (Figure 1). Adjacent, there was a small number of ductules lined by cuboidal epithelium with eosinophilic luminal secretions, spermatozoa and calcifications, morphologically resembling vasitis nodosa. There were several foci of extravasated spermatozoa in the surrounding connective

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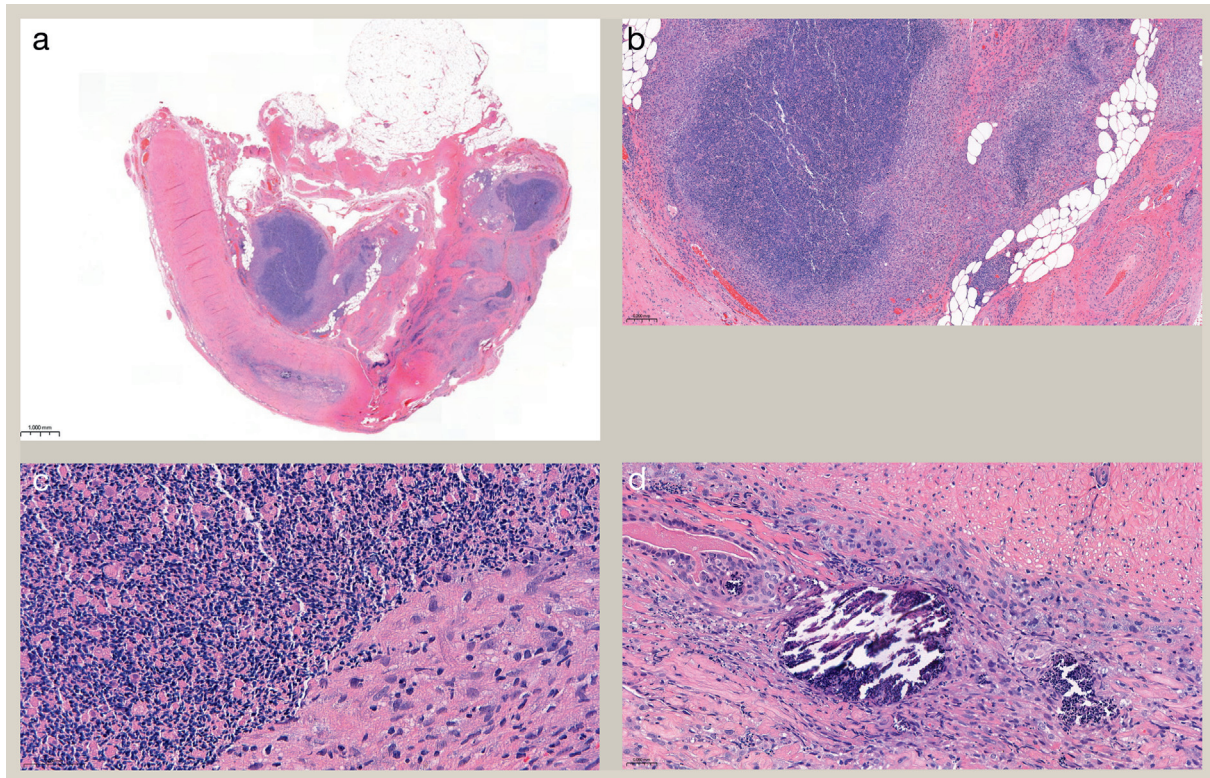
tissue with an associated histiocytic response. The diagnosis of sperm granuloma was made. The patient was discharged following the postoperative period of recovery.

## Discussion

Sperm granuloma is a benign non-infectious process resulting from extravasation of sperm cells. Outside of the male ductal system, the immune system regards these as a type of foreign tissue, resulting in a histiocytic response, sometimes with multinucleate giant cells. The typical site of this lesion is epididymis, and in approximately one third of cases, it is accompanied by vasitis nodosa, a benign ductular proliferation in vas deferens.<sup>1</sup> Sperm granuloma may develop as a result of damage to the vas deferens with possible aetiologies including iatrogenic (incidental e.g. during pelvic surgery, or deliberate e.g. male sterilization), inflammation and infection. The primary aetiological factor in the present case is uncertain, however, it was noted from the surgical record that the inflammatory process involved bladder with suspected vesicocolic fistula formation. The vasa deferentia normally extend into the pelvis and run supero-laterally around the bladder; these anatomical relations may have made them vulnerable to the adjacent inflammatory process. Further alternations to the pelvic anatomy would have resulted from the necessary surgical intervention to correct the visceral defects. It is likely that the combination of these factors has resulted in the damage to the vas deferens with subsequent extravasation of the sperm cells into the peritoneal cavity and granuloma formation.

The development of sperm granuloma outside of the male reproductive system is very rare and has previously been described in patients with a history of previous surgery around the urological system such as prostatectomy<sup>2,3</sup> and hernia repair.<sup>4</sup> In previous published cases of extra-reproductive system sperm granuloma, the presenting complaints included pain around the site of surgery, lower urinary tract symptoms and abnormality on radiological assessment during follow-up. While the impact on fertility has not been discussed explicitly, it would be reasonable to suggest that difficulty in conceiving naturally could also form a part of presenting symptoms for the affected patients.

The diagnosis of sperm granuloma requires recognition of the characteristic morphology of the spermatozoa, which may be mistaken for a lymphocytic population, small cell carcinoma or



**Figure 1** (a) Low power view of the lesion and surrounding fibroconnective tissues (H&E,  $\times 0.9$ ). (b) Lesion and surrounding histiocytic inflammation (H&E,  $\times 5$ ). (c) High power view of mature spermatozoa. Note their small size compared to surrounding inflammatory cells (H&E,  $\times 40$ ). (d) Ductular profiles with eosinophilic luminal secretions, spermatozoa and calcifications (H&E,  $\times 40$ ).

other small round blue cell tumour, particularly when present at an unusual site. In a tertiary hospital, the peritoneal nodule specimen would likely be assigned for reporting to a gastrointestinal histopathologist who must maintain an open mind to the potential of an unusual diagnosis in a usual specimen and not be misled by the possible clinical suspicion of malignancy.

### Conclusion

Here we present a case of sperm granuloma with its unusual site of presentation as a peritoneal nodule. The diagnosis involves the recognition of mature spermatozoa with surrounding histiocytes, particularly in the setting of previous surgery, inflammation or infection in the proximity of the male reproductive system. To our knowledge, this is the first described case of a sperm granuloma presenting as an intra-abdominal peritoneal nodule. ◆

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### Practice points

- Mature spermatozoa are small-sized cells with hyperchromatic round-to-oval nuclei and scanty cytoplasm
- Careful observation is required to recognize spermatozoa outside the urological tract
- Previous history of surgery, inflammation or infection around the male reproductive tract is helpful when diagnosing sperm granuloma

**Self-assessment multiple-choice questions**

**1) Which of the following surgical procedures is most likely to be associated with a subsequent diagnosis of sperm granuloma?**

- a) Appendectomy
- b) Male sterilization
- c) Transurethral resection of the bladder
- d) Liver lobectomy
- e) Splenectomy

Answer: b

**2) Which of the following is most likely to be diagnosed alongside a sperm granuloma?**

- a) Vaginitis nodosa
- b) Seminoma
- c) Prostatic acinar adenocarcinoma
- d) Ulcerative colitis
- e) Tuberculosis

Answer: a

**3) Which of the following histological features is most likely to be observed in mature spermatozoa?**

- a) Prominent nucleoli
- b) Abundant cytoplasm
- c) Multinucleation
- d) Nuclear hyperchromasia
- e) Mitotic figures

Answer: d