

## Incipient Fournier's gangrene

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**Section:** Uroradiology & genital male imaging

**Area of Interest:** Emergency

**Procedure:** Diagnostic procedure

**Imaging Technique:** CT

**Special Focus:** Acute Case Type: Clinical Cases

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**Patient:** 70 years, female

### Clinical History:

70-year-old patient presented with scrotal pain, scrotal swelling, crepitus, pruritus and fever. In ultrasounds hyperaemia of soft-tissues was evident. Analytics: leukocytosis, anaemia, hypocalcaemia, and hyperglycaemia. Alcohol abuse for 20 years.

### Imaging Findings:

Anteroposterior scout radiograph shows numerous radiolucent pockets (Fig. 1) in the soft tissues overlying the region of the scrotum and perineum, findings that represent subcutaneous emphysema.

Contrast-enhanced CT scan (Fig. 2, 3 and 4) shows perineal foci of gas (more on the left side than on the right) that extend cranially to the scrotum and subcutaneous tissues.

There is neither extensive fat stranding nor inflammation.

### Discussion:

Fournier's gangrene represents a urologic emergency with a potentially high mortality rate. It is a rapidly progressing, polymicrobial necrotising fasciitis of the perineal, perianal, and genital regions, with a mortality rate ranging from 15% to 50% [2].

Inflammation and oedema from infection result in an impaired local blood supply, leading to vascular thrombosis in the cutaneous and subcutaneous tissues. Perifascial dissection with subsequent spread of bacteria and progression to gangrene of the overlying tissues ensues. The rate of fascial necrosis has been noted to be as high as 2–3 cm per hour, making early diagnosis crucial [2, 3].

The most common predisposing factors for Fournier's gangrene are diabetes mellitus and alcohol abuse [1, 3].

The most common presenting symptoms of Fournier's gangrene include scrotal swelling, pain, hyperaemia, pruritus, crepitus, and fever. A foul-smelling discharge may also be present. The onset of symptoms tends to occur over a 2–7-day period. Soft-tissue gas may be present prior to the detection of clinical crepitus. Crepitus is identified at physical examination in 19%–64% of patients [3].

Air in the soft tissues represents insoluble gas produced by anaerobic bacteria and consists primarily of nitrogen, hydrogen, nitrous oxide, and hydrogen sulfide.

Systemic findings in Fournier's gangrene may include dehydration, tachycardia and thrombocytopenia. Fournier's

gangrene tends to be polymicrobial in nature, with synergy of aerobic and anaerobic bacteria. An average of more than three organisms is cultured per patient. The most commonly found bacteria are Escherichia coli (aerobe) followed by Bacteroides (anaerobe) and streptococcal species (aerobe). Other bacteria involved in Fournier's gangrene include Staphylococcus, Enterococcus, Clostridium, Pseudomonas, Klebsiella, and Proteus species. The organisms that tend to be found in Fournier's gangrene are species that normally exist below the pelvic diaphragm, in the perineum and genitalia [2, 3].

CT findings: soft tissue stranding, fascial thickening and/or scrotal/perineal soft tissue gas.

The extent of disease can be assessed prior to surgery. A cause of infection may be apparent (e.g. perianal abscess, fistula), or not (like in this case).

A US finding in Fournier's gangrene is a thickened, oedematous scrotal wall. The thickened scrotal wall contains hyperechoic foci that demonstrate reverberation artefacts, causing "dirty" shadowing that represents gas within the scrotal wall.

In this case, the patient had an uneventful recovery after undergoing surgery, which included perineal debridement, incision and cystoscopy.

**Differential Diagnosis List:** Incipient Fournier's gangrene., Epididymo-orchitis, Testicular torsion, Testicular trauma, Scrotal cellulitis/abscess

**Final Diagnosis:** Incipient Fournier's gangrene.

#### References:

- Uppot RN, Levy HM, Patel PH. (2003) Case 54: Fournier gangrene. Radiology 226 (1): 115-7. (PMID: [12511678](#))  
Levenson RB, Singh AK, Novelline RA. (2008) Fournier gangrene: role of imaging. Radiographics Mar-Apr;28(2):519-28 (PMID: [18349455](#))  
Rajan DK, Scharer KA (1998) Radiology of Fournier's gangrene. AJR Am J Roentgenol 1998;170 (1): 163-8 (PMID: [9423625](#))

**Figure 1**

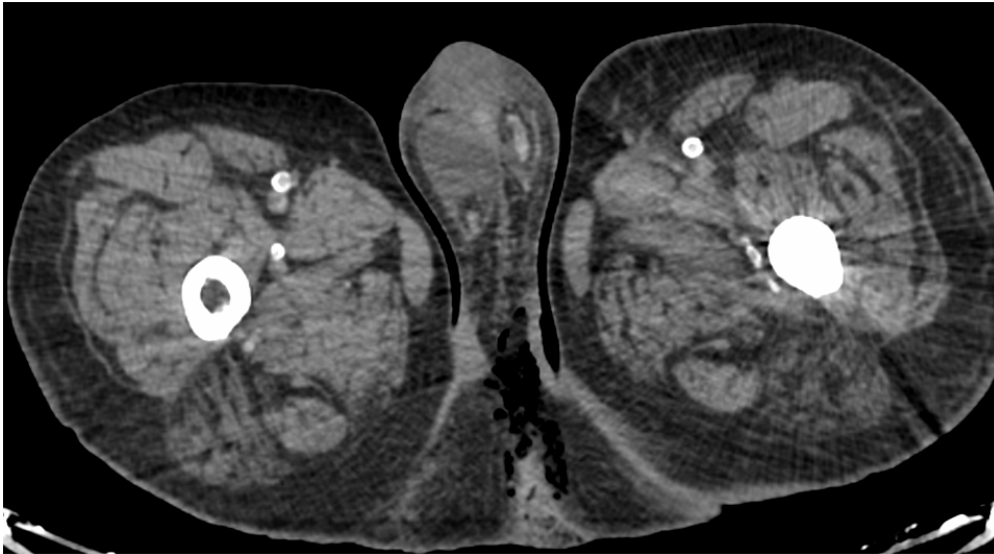
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**Description:** There are hyperlucencies representing soft-tissue gas in the region overlying the left scrotum and perineum. **Origin:** Department of Radiology. Hospital Virgen de la Arrixaca, Murcia, Spain.

**Figure 2**

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**Description:** No significant inflammation, but the CT shows air in the subcutaneous tissues of the perineum and the inferior part of the scrotum. **Origin:** Department of Radiology. Hospital Virgen de la Arrixaca. Murcia, Spain.

**Figure 3**

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**Description:** No significant inflammation, but the CT shows air in the subcutaneous tissues of the perineum and the inferior part of the scrotum. Mild to moderate amount of hydrocele is present. **Origin:** Department of Radiology. Hospital Virgen de la Arrixaca, Murcia, Spain.

**Figure 4**

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**Description:** The air in the subcutaneous tissues of the perineum is evident. **Origin:** Department of Radiology. Hospital Virgen de la Arrixaca, Murcia, Spain.