QUIZ SECTION

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Haemorrhagic Bullous Wound Changes After a Knee Joint Replacement: A Quiz

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A 76-year-old woman who was referred with suspicion of knee joint replacement-associated infection. She had undergone elective joint replacement at a specialized orthopaedic centre. Three days after surgery, infection markers in the blood remained significantly elevated, accompanied by subfebrile temperatures. No systemic source of infection was found. The patient reported increasing pain in the surgical area, accompanied by bullous wound changes. Surgical revision was performed 6 days after the initial operation. Brown, non-fetid liquid was evacuated, along with some haematoma, and a change of inlay was performed, alongside microbial sampling. Despite continued antibiotic therapy, the patient's condition continuously deteriorated, prompting transfer to the University Hospital of Basel. On admission, the patient was sub-febrile with elevated infection markers in the blood. Extensive haemorrhagic bullae were present around the surgical suture (Fig. 1). Vascular assessment excluded peripheral arterial occlusive disease. Subsequently,

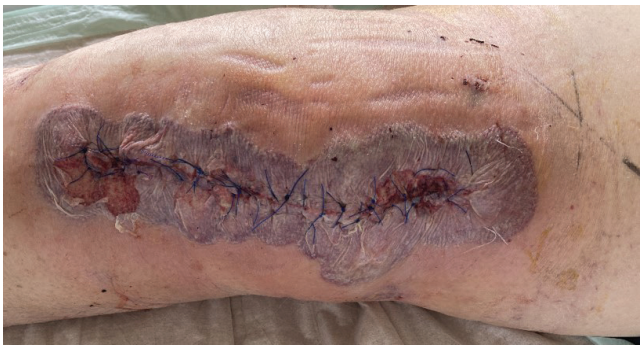

Fig. 1. Clinical image of the affected leg upon initial presentation.

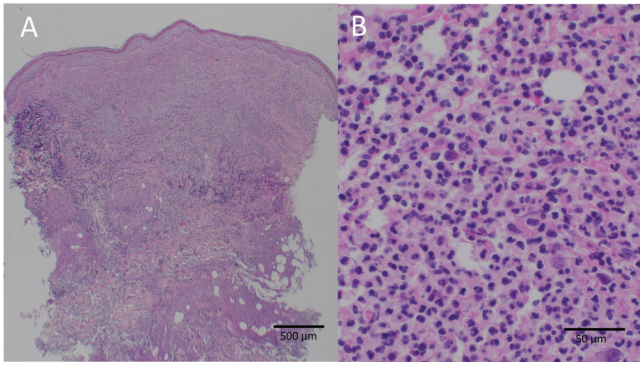

Fig. 2. Skin histology from the margin of the wound depicting a deep heavy predominantly neutrophilic infiltrate with admixed histiocytes and some lymphocytes. HE staining: (A) 40x magnification and (B) 400x magnification.

a significant deterioration in the patient's general condition and the wound was observed. Although initial microbial samples showed no growth of microbes, additional microbial sampling and wound edge biopsy were performed. A histologic examination showed a heavy deep perivascular and interstitial neutrophilic inflammation with admixed histiocytes and few lymphocytes (Fig. 2), with negative microbial stainings (PAS, Gram, Ziehl Neelsen) (Fig. 3).

What is your diagnosis?

Differential diagnosis 1: Necrotizing fasciitis
Differential diagnosis 2: Cutaneous tuberculosis
Differential diagnosis 3: Bullous pyoderma gangrenosum
Differential diagnosis 4: Bullous contact dermatitis

See next page for answer.

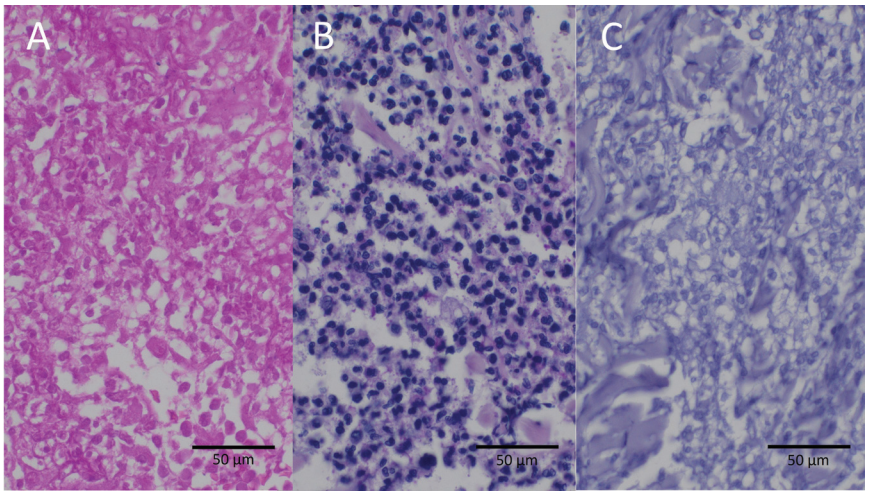

Fig. 3. Skin histology from the margin of the wound with negative microbial stainings for (A) bacteria (Gram staining, 400x magnification), (B) fungal elements (PAS staining, 400x), and (C) acid-fast bacilli (Ziehl Neelsen staining, 400x).

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ANSWERS TO QUIZ

Haemorrhagic Bullous Wound Changes After a Knee Joint Replacement: A Commentary

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Diagnosis: **Bullous pyoderma gangrenosum**

Antibiotic therapy was changed to imipenem and clindamycin intravenously and concomitant high-dose systemic steroid therapy was initiated. Under this treatment regimen, the patient's clinical state improved rapidly. All microbial cultures and eubacterial polymerase chain reaction (PCR) remained negative.

Five days after escalating antibiotic therapy it was discontinued, while sustaining systemic high-dose steroid therapy. The patient's condition remained stable, and wound conditions improved. Subsequently, surgical reconstruction of the affected knee joint and tissue defect was performed over several months. As part of a continuous steroid reduction regimen for systemic immunosuppression, tumour necrosis factor (TNF)-alpha inhibitors were introduced. The patient tolerated all subsequent surgical interventions well. Immunosuppressive therapy was eventually able to be stopped after 8 months.

Pyoderma gangrenosum (PG) is a rare dermatological condition with most therapy recommendations based on clinical experience and case reports/series. It is mostly a clinical diagnosis supported by histological findings of deep dermal neutrophilic infiltrate (1, 2). Atypical (bullous) pyoderma gangrenosum (APG) is an even rarer sub-variant (1–3). Often initially misdiagnosed as an infectious process, it presents with bullous and ulcerative skin changes, sometimes with signs of necrosis (4–6). Diagnosis is made by excluding other disease entities. Generally, surgical interventions in this condition pose a risk of recurrence, leading to the pathergy phenomenon. PG has been known to manifest for the first time after surgical interventions, particularly in breast and orthopaedic surgery (5–8). In this context diagnosis is often delayed by mimicking postoperative wound infections, posing a peculiar challenge in postoperative care and management (5, 7–10).

Atypical pyoderma gangrenosum should be considered when anti-infective therapy yields insufficient improvement and dermatological evaluation should be sought. Perioperative management can be challenging and requires interdisciplinary cooperation. Often long-term systemic immunosuppression is necessary to achieve remission.

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