

## A complex upper limb infection

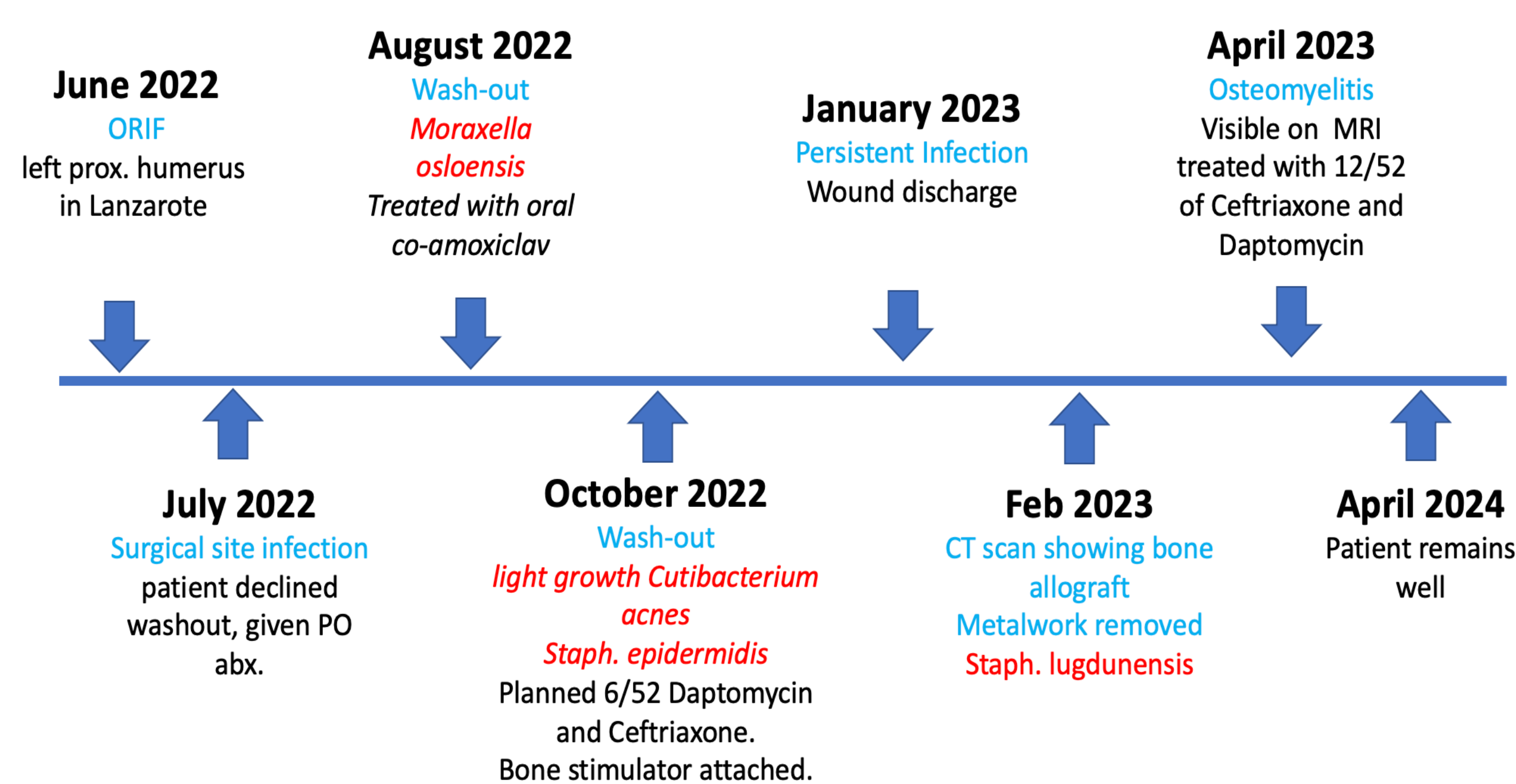
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### Background:

Bone allograft may be used in upper limb surgery where there is a deficit of bone; for example, with a fracture non-union or bony lesion. Despite steps to decontaminate bone allografts, there are reports of contamination rates of up to 12.6%.

### Timeline:



### Case Summary:

A 45-year-old woman sustained a proximal humerus fracture following a fall while on holidays in the Canary Islands, requiring open reduction and internal fixation (ORIF). One month after surgery, she developed signs of infection at the surgical site and was treated empirically with oral antibiotics. Her symptoms recurred and eight weeks after the fall she underwent an incision and drainage of the surgical site. Cross sectional imaging at the time showed a possible organising haematoma around the neck of the humerus but no osteomyelitis. Microbiological culture grew *Moraxella osloensis*. She was treated with oral co-amoxiclav for a surgical site infection. Signs of infection recurred and a washout and debridement was performed four months after initial injury, surgical specimens showed light growth of *Cutibacterium acnes* and *Staphylococcus epidermidis* and she was treated with ceftriaxone and daptomycin outpatient parenteral antimicrobial therapy (OPAT). While on antibiotics her wound started to discharge and further cross sectional imaging was performed, revealing rectangular shaped material in the marrow cavity of the humerus consistent with a freeze dried fibular strut allograft which had not previously been appreciated.

All metalwork was explanted. The bone allograft could not be removed. Intraoperative specimens grew *Staphylococcus lugdunensis*. The patient experienced ongoing discharge after surgery and follow up magnetic resonance imaging demonstrated evidence of septic arthritis at the glenohumeral joint. She was treated with 12 weeks of ceftriaxone and daptomycin OPAT. One year following completion of this course of antimicrobials the patient remains well without evidence of recrudescence of infection.

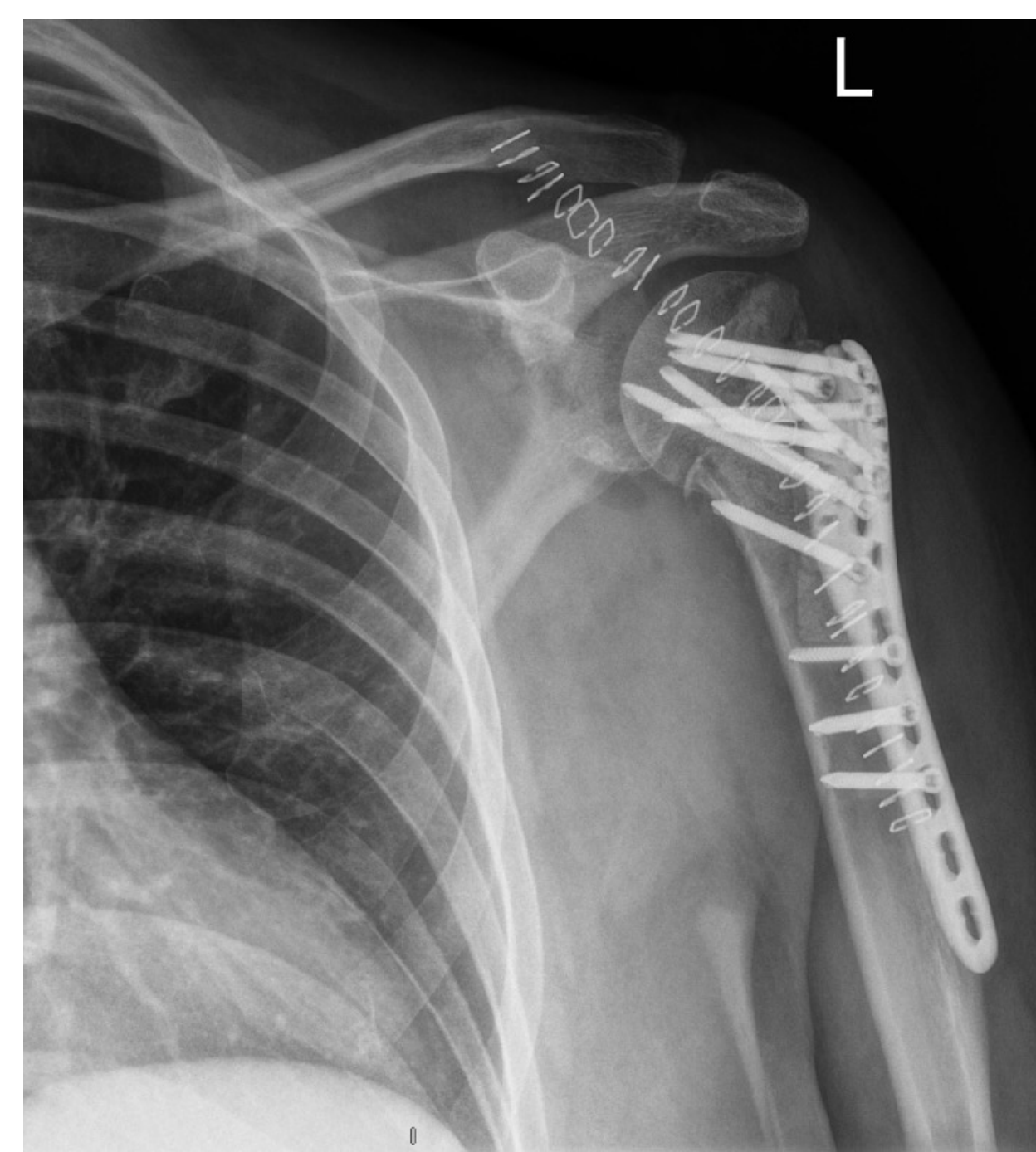


Figure 1



Figure 2a

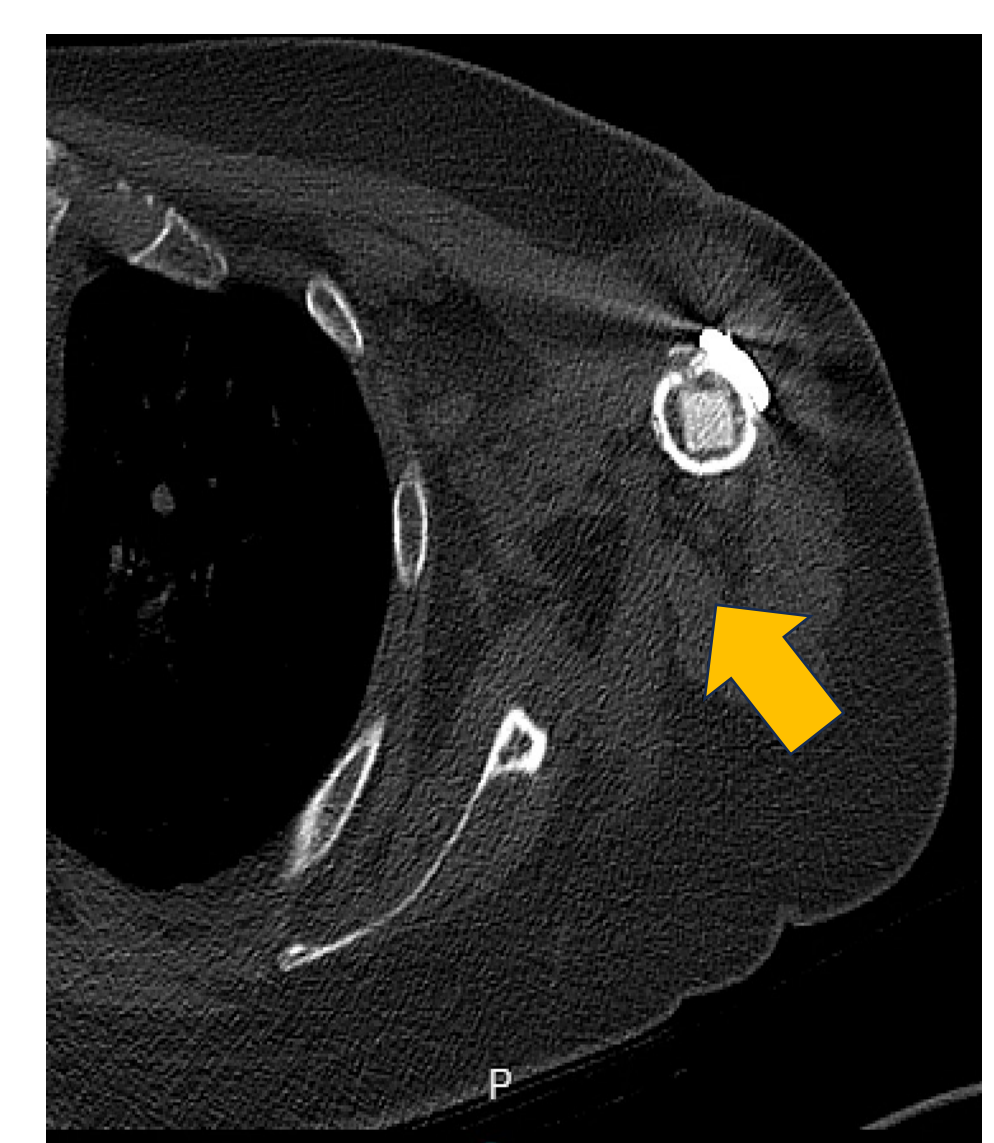


Figure 2b

Fig 1 Initial X-ray of left upper limb showing metalwork in situ. Fig 2a and 2b coronal and axial views of CT scan from February identifying allograft bone.



Figure 3



Figure 4

Figure 3 X-ray after explanation of metalwork. Figure 4 MRI Some evidence of a low grade septic arthritis at the glenohumeral joint (bony oedema and small effusion). Evidence of a small abscess anterior to the bicep groove.

### Conclusion:

While cadaveric bone allografts are not commonly used in Ireland they remain part of standard practice in some regions of Europe. Bone allografts may be contaminated and have been associated with infection in the graft recipient, one study found contamination rates as high as 18% in bone bank specimens. It is uncertain whether the bone allograft in this case was contaminated, it made source control more challenging due to limited vascularisation. Control of infection in this case was only achieved with removal of all metal work and prolonged intravenous antibiotic therapy.