Roundup360

Hip & Pelvis

X-ref *For other Round-ups in this issue that cross-reference with Hip & Pelvis see: Children's orthopaedics round-up 1; Trauma round-up 6; Research round-up 5.*

Understanding culture-negative periprosthetic joint infection
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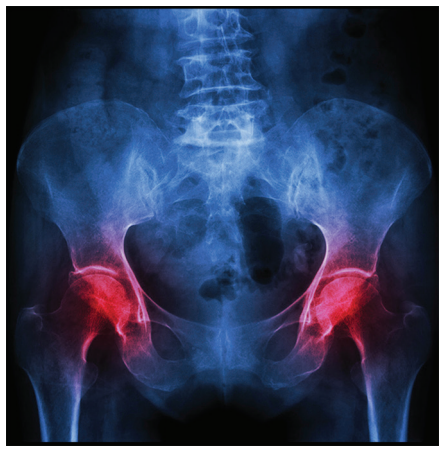
Culture results are a critical component for management of periprosthetic joint infection (PJI) to guide treatment. The vast majority of treatment algorithms revolve around diagnosis of the causative organism, then a directed surgical and antibiotic strategy, depending on the organism and sensitivities found. It is widely recognized that the subset of patients with clinically likely infection in the setting of negative cultures are challenging to treat effectively. Treatment strategies typically require an empirical approach to antibiotic choice, and multiple stage revisions. There has been a great deal of interest in next-generation sequencing (NGS) to improve our ability to diagnose and treat PJI. This technology works to detect bacterial genetic sequences that are common among a large number of different organisms, allowing it to function as a high-sensitivity screening tool with the ability to also identify organism species. This is termed 'next-generation sequencing' as it is the next step beyond quantitative polymerase chain reaction (qPCR), which is able to effectively detect DNA from specific organisms but unable to broadly screen for a large number of organisms. While the technologies are well developed, the precise application is not. In this multicentre prospective study from across the **USA**, the authors enrolled 301 patients who met the criteria for PJI diagnosis, with negative cultures seen in 85 patients (28.2%).[1] The major positive finding of this study is that NGS was



able to identify an organism in 56 of the 85 culture-negative patients (65.9%), with the highest yield of positive results being from tissue sampling (46.6%) followed by swabs (34.1%) and synovial fluid (19.3%). The authors were able to identify 176 different organisms in this cohort, with over 90% being considered uncommon or atypical organisms for PJI. They also found a very high rate of polymicrobial infections (91.1%) within this cohort of 56 NGS-positive patients, with one organism being identified as dominant in all polymicrobial infections. The difficulty here, as with all sequencing-based methods, is that when there is polymicrobial growth it is difficult or impossible to work out if there is contamination. This work helps to provide guidance on how NGS may be incorporated into common practice as a helpful tool to capture and identify culture-negative infections from tissue samples with potentially more limited utility for synovial fluid screening. It also provides novel information that a large number of our PJI patients likely have complex polymicrobial infections that to date have not been understood due to the limitations of our traditional diagnostic tools.

Modular dual-mobility articulations in patients with adverse spinopelvic mobility
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Our understanding of the relationship between spinopelvic pathology and total hip arthroplasty (THA) dislocation risk is rapidly evolving, with a great deal of research interest in this topic and ongoing interest from both spinal and hip surgical communities. We continue to better define clinically useful measurements along with the specific types of spinopelvic disease that affect the hip, and this is an area where we at *BJ360* would argue there has been tangible progress over the past few years. Despite this recent progress, we do not yet have enough data to individualize implant positioning for optimized stability in the wider variety of pathology. This lack of individualized guidance has led to the increasingly widespread adoption of dual-mobility usage in this patient population in an effort to lower dislocation rates. This study from **Melbourne (Australia)** used the Australian Orthopaedic Association National Joint Registry to identify a consecutive series of 227 patients undergoing THA with a dual-mobility articulation, who all had at least one adverse spinopelvic mobility parameter (such as spine stiffness, severe sagittal spinal deformity, or abnormal pelvic mobility), as defined previously by the Hip-Spine Workgroup in 2017.[2] The authors found one identifiable spinopelvic risk factor in almost half (47%) of the patients, with two or more identifiable factors in the remaining patients, including six patients with five identified risk factors. It has previously been established that this population is at increased risk for dislocation. Despite this, there were no dislocations reported, with only two reoperations in the follow-up period (one for infection, one for