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Stress reduction as effective as CBT in lower back pain

Effective non-operative management of chronic lower back pain can be a difficult trick to pull off, and a randomised trial comparing different modalities is an even more difficult task. We were delighted to read this randomised controlled trial in *JAMA*, which reports the outcomes of a large study comparing usual care, mindfulness stress reduction and cognitive behavioural therapy (CBT) as interventions for managing chronic lower back pain. The research team in [Washington State \(USA\)](#) recruited 342 adults, all with a clear history of chronic lower back pain.¹ Participants were randomised to either standard care, CBT or mindfulness stress reduction (a yoga-based therapy). The groups were evenly sized, and outcomes were assessed at regular intervals until final follow-up. The research team chose a co-primary outcome of clinically meaningful improvement in the back pain bothersome index and the Roland Disability Questionnaire (RDQ). The addition of CBT and mindfulness therapy improved the percentage of patients achieving a clinically meaningful improvement on the RDQ outcomes (60.5% and 57.7%, respectively) over standard care (44%). There were no differences seen between the mindfulness group and CBT group at any follow-up interval in this study. This is an interesting study in that it validates the use of mindfulness stress reduction in the management of lower back pain, and finds it to be as effective as the best talking therapy (CBT). Mindfulness-based relaxation and stress reduction is a simple and easy way to provide a technique that appears to be as effective as CBT. A useful addition to the few options to treat chronic back pain.

Coccygectomy: a success in coccydynia

Coccydynia is quite literally a pain in the bum for many patients. Sometimes post-traumatic, and sometimes spontaneous, patients are famously problematic to treat, and teasing out the often functional overlay and somatisation that many patients exhibit can be difficult. Not unreasonably, surgeons are naturally cautious about coccyx excision. A brave group of spinal surgeons in [Charlotte \(USA\)](#) have, however, undertaken a large number of coccygectomies, and report their experience of just short of 100 cases performed over a five-year period.² All patients in their observational series had chronic pain, associated with pain on palpation and radiological abnormality. All patients underwent a coccygectomy following failure of conservative treatment methods. Outcomes were measured with the Oswestry Disability Index (ODI), a visual analogue scale and quality of life score which was estimated with the SF-36 score. Outcomes were assessed at two years following treatment, with success defined as an improvement of 20 points on the ODI, which represents a clinically significant change. Using the authors' criteria of success, 69 patients had a successful outcome, and, of the remaining 25 patients, six had poorer or equivalent scores to the pre-operative condition, while the remainder failed to improve significantly. Patients who went on to have an unsuccessful outcome presented with poorer pre-operative ODI scores and VAS scores. Perhaps least surprisingly, they had a

higher incidence of psychiatric problems and heavy opioid use. This is a really important paper, as it outlines that coccygectomy can be a very successful operation where selected problems are concerned and may well be significantly underutilised, perhaps due to unfounded fears of complications and poor clinical outcomes.

Tuberculosis better treated posteriorly

Authors from [Assiut \(Egypt\)](#) studied the influence that the surgical approach might have on outcomes when treating patients with tuberculosis spondylitis of the spine.³ Their report describes the outcomes of 42 patients. Twenty of the patients were treated with anterior debridement, decompression and instrumentation, while 22 patients were treated with posterolateral decompression and instrumentation. Arguments can be made for either an anterior approach (potentially better access to the disc, and any paravertebral collection) or a posterior approach (easier correction of the common kyphotic deformity). Outcomes



were assessed at an average of 15 months, and on the face of it the anterior surgical approach appeared simpler, with shorter operative times and lower recorded blood loss. However, the posterolateral approach allowed for significantly better correction of kyphosis, and the results mirror this with less post-operative deformity and some improvement in back pain, giving better results at final follow-up. There were no differences between the two groups in the effectiveness of surgery (fusion

rates and functional outcomes) or incidence of nerve root injury. The authors' results suggest that both anterolateral and posterolateral approaches are sufficient for treatment of infection, however, despite the small size of this series for a comparative study, we would tend to agree that the reported advantages of superior correction of deformity and lower incidence of prolonged back pain would give the posterior approach the edge.

Cervical disc arthroplasty: a safe alternative to fusion

Cervical disc arthroplasty has a mixed history. With reports of difficult to treat infections, abraded debris making its way into the spinal canal, and high rates of re-operation associated with the early spinal disc replacements, the debated benefits of a lower incidence of adjacent segment disease seemed to pale into insignificance, and for a time many surgeons lost interest in the concept. As tribology has improved and the implant companies have renewed their interest in spinal arthroplasty, there is a new enthusiasm for disc arthroplasty, particularly in the cervical spine. A review team in [Guangzhou \(China\)](#) have taken the initiative in cervical disc arthroplasty and set out to establish what, if anything, has changed in the literature since the initial poor reports.⁴ Their extensive search of the indexed literature identified 12 RCTs reporting the outcomes of 3234 patients, randomised to eight different models of disc arthroplasty. The study team chose to use re-operation as their primary outcome measure. An unfortunate observation is that nine of the studies included in this meta-analysis received industry funding, so one has to take the results with a slight pinch of salt. The headline result of this study was that the overall re-operation rates (6% versus 12% relative risk (RR) 0.54) were lower in the arthroplasty group, as was the

re-operation rate at the index level (RR 0.5) and at the adjacent levels (RR 0.54). The results are clearly in favour of the disc arthroplasty, if re-operation is taken as the end point. The authors (as in all meta-analyses) recommend additional high-quality studies. However, we would inject a note of caution here; the end point of re-operation is not as hard an end point as it first appears. If the treating surgeons are hesitant about treatment of adjacent levels due to the difficulties of achieving a fusion with a disc *in situ*, or are concerned about the difficulties associated with achieving fusion in an already replaced disc, then the outcome is meaningless.

Lumbar spine disease and hip biomechanics X-ref

■ The lumbar spine, pelvis and hips have a complex and dynamic relationship during gait. Any change in lumbar spinal mechanics will have an effect on pelvic motion, and hip and lower limb function. The counter is, of course, also true. This is an incredibly complicated area to unpick and the decision-making surrounding implant position in the hip in the presence of a significant spinal deformity is a difficult one. The orthopaedic group at the [Hospital for Special Surgery, New York \(USA\)](#) have turned their attention to one facet of this problem: the effect that sitting may have on hip biomechanics.⁵ In the sitting position, the pelvic tilt (which is directly determined by the centre of gravity and the lumbar spine) in turn determines the acetabular rim position and thereby the risk of anterior impingement (which can lead to posterior dislocation after hip arthroplasty). The authors designed a study to compare the changes in pelvic tilt between a group with and without lumbar spine disease, all having total hip arthroplasty. With a reasonable sample of 325 patients all undergoing radiographs using the EOS system, the authors excluded 83 patients with spinal anomalies, further surgery or scoliosis. Of the

remainder, patients were categorised as having radiographic arthrosis or not, and a range of radiographic parameters were measured in both standing and sitting positions. When interpreting their results, the authors controlled for age, sex and BMI, and did see some changes between the two groups. Those patients with degenerative lumbar spine disease had a more marked pelvic tilt (mean of 5° more posterior pelvic tilt) and less lordosis (by a mean of 7°) in the standing position although when sitting, the results were slightly different, with patients managing to achieve just 4° off the standardised pelvic tilt. However, in order to do so, 10° less spine flexion was used and consequently 10° more femoroacetabular flexion. This is an interesting paper in that it highlights the difficulties of assessing a composite range of motion associated with spinal and hip pathology. In those patients with lumbar spine disease, this paper would suggest there is functionally less acetabular anteversion to allow the patient to sit. It may be prudent to take this into account when positioning components.

Does marrow oedema relate to back pain?

■ A research team in [Fukushima \(Japan\)](#), in collaboration with investigators in [Gothenburg \(Sweden\)](#), identified an important positive finding on a simple cross-sectional study.⁶ The cause of back pain in degenerative scoliosis is often far from clear. The study team undertook a study of 120 patients, all with degenerative scoliosis who had previously undergone both CT and MRI scanning. The aim of the study was to establish if changes on the MRI scan correlated to clinical low back pain. The presence of bone marrow oedema was strongly associated with the report of low back pain. Patients reporting subjective low back pain were significantly more likely to have bone marrow oedema present on their MRI scan (96.9% n = 62/64) compared with those who did not report low back

pain (37.5% n = 21/56), and this was seen more commonly on the convex than the concave side of the scoliosis. There was a moderate correlation between oedema score and pain severity. Perhaps more subjectively, there was a strong correlation between the laterality and site of the oedema and the reported pain. Although just an associative finding, there is clearly some further work to be done here. A post-surgical follow-up study with repeated pain scores and oedema scores would very rapidly establish if there is a treatment effect for correction and fusion. Tantalisingly, should this be the case then marrow oedema would be a tempting candidate to predict those patients who may benefit from surgical intervention for other causes of low back pain.

Minor scoliosis curves not so minor?

■ Little is known about any disease where there is no presentation to medical services. In orthopaedics, we struggle particularly in determining whether the natural history of minor untreated conditions will give rise to more serious conditions later in life. This is where birth cohort studies are of great use – allowing epidemiological study of the apparently well, along with those presenting with symptoms. Investigators using a birth cohort based in [Oxford \(UK\)](#) have conducted an extremely valuable study of smaller curves in adolescent idiopathic scoliosis.⁷ Their study utilised the Avon Longitudinal Study of Parents and Children (ALSPAC), a birth cohort of over 14 000 patients. The current report concerns a subset of 5299 patients with a DEXA scoliosis measure, and another cohort of 4038 participants who had undertaken a structured pain questionnaire. The full data were only available for 3184 participants, nonetheless this is by far the largest cohort study with imaging on scoliosis. The study revealed the incidence of spinal curves to be 6.3% (n = 202/3184), with 3.9% having a curve greater than 10°. There was a

marked association between spinal curves and the reporting of back pain (odds ratio 1.42). Aside from the pain issue, this translated into significantly more days off school and avoidance of activities that might provoke back pain. While sub-clinical scoliosis is clearly not a major functional problem, it does remain a potential cause for intermittent back pain and reduced participation in social and developmental activities. Despite the authors' call to screen patients for scoliosis, given the lack of suitable treatment for these minor curves, clearly the risks would outweigh the benefits. Here at 360 we think it would be prudent to keep scoliosis in mind as a potential cause of back pain in the apparently clinically normal child.

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