



CLINICAL TRIAL HIGHLIGHTS

The study involved 100 female patients who underwent short proximal femoral nail fixation for low-energy hip intertrochanteric fracture. Patients were randomized to receive either risedronate 75 mg (n=51) on 2 consecutive days each month, or placebo (n=49), and received follow-up screening for 1 year to compare differences in BMD between the two groups, and evaluate the incidence of low energy refractures. BMD was measured with QUS, which provided stiffness index derived from the measurement of speed of sound, and broadband ultrasound attenuation.

Patients included in the study were postmenopausal women who had not previously been managed with bisphosphonates, and were independently mobile. Exclusion criteria included diseases known to affect bone metabolism and other serious comorbidities.

At 1-year follow-up, there were significant differences between the two groups in the parameters measured by QUS. These differences correlated with improved bone strength and reduced incidence of low energy refracture (hip, vertebrae, wrist) in patients treated with risedronate, and then placed in a follow-up program to monitor both the current fracture and bone status (Table 1).

Table 1. QUS Parameters and Incidence of Refracture

Postmenopausal Women Treated After Intertrochanteric Fracture (n=100)	Group A (Risedronate) n=51 women	Group B (Placebo) n=49 women
BUA, dB/MHz	1480.09±25.6	1471.04±20.6
SOS, m/s	99.1±6.8	94.8±8.4
SI, %	64.0±9.6	60.2±12
Incidence of low energy refractures, %	1.9	4.1

BUA=broadband ultrasound attenuation; SI=stiffness index; SOS=speed of sound.

In addition to using best practice to treat current fractures in patients with osteoporosis, orthopedic surgeons must also effectively manage the disease to prevent new fractures. Prof. Betti therefore concluded that QUS imaging in patients with fractures enables evaluation of bone mass in this patient population, allowing for the provision of appropriate pharmacological agents as necessary to reduce the risk of new fractures.

Shared Decision-Making Tools Help Patients Make Quicker Orthopedic Treatment Decisions

Written by Nicola Parry

Kevin J Bozic, MD, MBA, University of California, San Francisco, San Francisco, California, USA, presented data from a randomized controlled trial (RCT), demonstrating that more patients made informed

treatment decisions during their first appointment with an orthopedic surgeon if shared decision-making (SDM) interventions were used [Bozic KJ et al. *J Bone Joint Surg Am* 2013].

Although the concept of SDM is an important philosophy that has been shown to be effective in clinical practice, the use of tools for treatment decisions to enhance decision quality and patient engagement has not yet been widely adopted in orthopedic practice.

Consequently, Dr. Bozic and colleagues designed a RCT in patients with osteoarthritis (OA) of the hip or knee to assess the impact of decision and communication aids on patient knowledge, decision-making efficiency, treatment choice, and patient and surgeon experience.

Patients who were appropriate candidates for hip or knee replacement (n=123) were included in the study and randomized to a SDM intervention group (IG; n=61), or usual care (UC; n=62). Those in the IG received a combination of aids to enhance patient knowledge, question asking, and information recall. Their decision aid was a DVD and booklet detailing the natural history and treatment alternatives for OA of the hip and knee, and comparing the risks and benefits of surgical and nonsurgical options. They also received a telephone consultation with a trained health coach to help them formulate a list of questions for their surgeon into an organized one-page document. Patients in the control group received information in the mail about the surgeon's practice.

Inclusion criteria included a primary diagnosis of OA of the hip or knee, first visit with an orthopedic surgeon for this problem, and no history of a lower-extremity joint arthroplasty. Patients were excluded if they could not read or speak English, or had previously visited another orthopedic surgeon for evaluation of the problem.

The primary outcome was whether patients reached an informed decision during their first appointment. Secondary outcomes included treatment choice, patient and provider satisfaction, and length of appointment time. Ultimately, 61 individuals in the IG, and 62 individuals in the UC group were included in the data analysis.

The results demonstrated that significantly more patients in the IG reached an informed decision during their first orthopedic appointment compared with those in the UC group (58.3% vs 33.3%; p=0.01; Table 1). Additionally, patients in the IG were more confident that they knew what questions to ask their surgeon during the visit (p=0.0034). Following the appointment, there was no significant difference between groups in their treatment choice (eg, surgical or nonsurgical; p=0.48).



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Table 1. Informed Decision-Making During First Appointment*

	Control Group† (n=60)	Intervention Group† (n=60)
No informed decision	40 (66.7%)	25 (41.7%)
Informed decision‡	20 (33.3%)	35 (58.3%)

*Significance for both groups was set at $p < 0.05$. The p value for this comparison was $p = 0.01$.
 †The values are given as the number of patients, with the percentage in parentheses. ‡Missing responses in this category, resulting in sixty patients in each group.

Surgeons also experienced benefits associated with SDM. With respect to the IG, they reported being asked more appropriate questions by patients ($p < 0.0001$), increased satisfaction with the efficiency of the visits ($p < 0.0001$), and increased overall satisfaction with the patient encounter ($p < 0.0001$).

Dr. Bozic and colleagues concluded that the results of their study demonstrate that SDM interventions in orthopedic practice benefit both the patient and surgeon, and he emphasized the value of introducing decision and communication aids into routine orthopedic practice.

Computer-Assisted Surgery Shortened Wrist Surgery Time and Improved Patient Scores

Written by Mary Mosley

Interim results from an ongoing trial showed that computer-assisted surgical (CAS) planning combined with patient-specific intraoperative guides reduced surgery and fluoroscopy times for distal radius corrective osteotomy and improved patient-reported outcomes. The technically difficult surgery has about a 17% incidence of distal radial malunion (DRM), said Natalie Leong, MD, University of California Los Angeles, Los Angeles, California, USA. This research group believes there is a positive correlation between quality of surgery and overall wrist function.

This is the first prospective, randomized, controlled trial of CAS for DRM and is being conducted at four institutions in the USA, Belgium, and Sweden [Leong NL et al. *BMC Musculoskelet Disord* 2010]. In the CAS patients, computed tomography (CT) scans of the bilateral forearm were used to make bony models, after which software determined the optimal osteotomy site and bony alignment by superimposing the malunited model onto the healthy contralateral model, and thereby determined the amount of correction needed. Then plastic customized intraoperative surgical guides were created using 3D printing. These guides were placed over the distal radius during the procedure and removed after surgery.

Patients who had extra-articular DRM and were > 3 months post injury were randomized to usual corrective

surgery ($n=9$) or CAS-guided surgery ($n=7$). Volar fixation along with osteotomy was performed in all patients. The use of bone grafting was left to the surgeon's discretion.

The mean operative time was reduced from 106 minutes in the control group to 78 minutes in the CAS group, and average fluoroscopy time was reduced from 226 to 31 msec, respectively ($p < 0.05$).

Before surgery, there were no differences between groups for Disability of Arm, Shoulder, and Hand (DASH) scores, Patient-Rated Wrist Evaluation (PRWE) scores, and Visual Analog Scores for pain and for satisfaction. All patients reported improvement in these measures after surgery, although there was a trend for a greater improvement in the CAS group compared with the control group at 3, 6, and 12 months, said Dr. Leong.

In the CAS group, the DASH scores improved more at 3 and 6 months (by ~30 to 35 points) compared with controls (~15 to 20 points). PRWE scores improved ~30 points with CAS compared with ~22 points at 6 months, and were nearly similar at 12 months. At 3 months, patient satisfaction improved by 6.5 points with CAS compared with 4.1 points with control at 3 months, and these rates of improvement were maintained at 12 months. Pain scores improved by 6.0 points and 3.5 points at 3 months and by 7 points and nearly 4 points at 12 months with CAS and control, respectively.

There were no malunions or nonunions at 12 months. There was one case of contralateral wrist fracture at 6 months and one case of self-limiting extensor synovitis with CAS, and one case of complex regional pain syndrome and one case of extensor carpi ulnaris in the control group.

The interim results are promising, said Dr. Leong, and the goal is to complete 1-year follow-up in 40 patients. Other possible uses for the CAS approach are cold trauma and congenital deformities.

Antifibrinolytics Reduced Blood Loss in Study of Adult Spinal Deformity Surgery

Written by Mary Mosley

In a surgery known for substantial blood loss (often > 5 L) and need for transfusion, two antifibrinolytics significantly reduced the primary outcomes of intraoperative and total blood loss (IOBL; TBL) compared with placebo in patients aged ≥ 50 years. However, in patients aged < 50 years, no significant differences were seen, said Thomas Cheriyan, MD, New York University Langone Medical Center, New York, New York, USA.

The prospective, double-blind trial randomized patients undergoing posterior spinal fusion of at least five levels to tranexamic acid (TXA; $n=19$),