OTA Choose Wisely Recommendations and Literature Support

A. Pre Op Non-orthopaedic Evaluation

**Routine cardiology consult for geriatric patients - Avoid advanced cardiovascular evaluation in the preoperative geriatric fracture patient unless current ACC/AHA guidelines are specifically met.**

Luttrell, Kevin and Nana, Arvind. Effect of Preoperative Transthoracic Echocardiogram on Mortality and Surgical Timing in Elderly Adults with Hip Fracture. 2015. Accepted for publication J Am Geriatric Society.


B. Pre Op Orthopaedic Evaluation

**Surgeon should be cautious about routine ordering of CT scans in fractures where the additional information is unlikely to change clinical decision making due to cost and increased radiation exposure.**

**CT scans of nondisplaced fractures –**


FDA link to risks of CT data: http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/MedicalImaging/MedicalX-Rays/ucm115329.htm

**CTAs for patients with injuries without soft or hard signs of vascular injury –**

CT angiography should be reserved for patients with obvious signs or high risk of vascular injury after a limb is aligned or joint reduced. Orthopedics. 2008 Aug;31(8):761-7.


Non-invasive vascular tests reliably exclude occult arterial trauma in injured extremities. Johansen K1, Lynch K, Paun M, Copass M.


The value of the ankle-brachial index for diagnosing arterial injury after knee dislocation: a prospective study. Mills WJ1, Barei DP, McNair P.

**Routine postop x-rays at 2 to 3-week for well-fixed fractures in reliable patients.**

Routine postoperative radiographs after surgery often carry little important clinical information and had significant cost and radiation exposure. Routine radiographs should be avoided unless a concern for fracture or implant failure is present.


McDonald MR; Bulka CM; Thakore RV; Obremskey WT; Ehrenfeld JM; Jahangir AA, Sethi MK.. Ankle Radiographs in the Early Postoperative Period: Do They Matter? Journal of Orthopaedic Trauma. 28(9):538-41, 2014 Sep.UI: 24375274

**CT scans done at referring hospitals.**

Referring hospitals should refrain from time-consuming and expensive imaging if a patient is already designated to be transferred due to increased cost high likelihood of a repeat study and radiation exposure.


FDA link to risks of CT data: http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/MedicalImaging/MedicalX-Rays/ucm115329.htm

**Routine screening for DVTs in multiple trauma patients** –

While screening protocols have captured increased rates of DVTs in polytrauma patients with skeletal injury (Stannard 2005), negative and positive predictive values for symptomatic PE is insufficient (Borer 2005, Knudson 1992). The poor diagnostic predictive utility for symptomatic PE couple with the already low rates of VTE from wide-spread appropriate use of hemoprophylaxis have lead to the demonstration of cost-ineffectiveness for routine VTE screening (Satiani 1997). Together, these data suggest that routine VTE screening in asymptomatic patients with low pre-test probability do not benefit our patients.


Interventions

**Routine internal fixation of isolated displaced clavicle fractures in all patients.**

Multiple studies of compared operative versus nonoperative treatment of 100% displaced midshaft clavicle fractures. The studies all indicate that 75% of patients with this injury heal without operative intervention and normal shoulder function. 15% of patients develop a nonunion and 10% develop a malunion. 25% of patients who have operative fixation require a second operation for plate removal. Research is underway to determine which patients benefit most from operative intervention.


Smith CA, Rudd J, Crosby LA. Results of operative versus nonoperative treatment for 100% displaced midshaft clavicle fractures: a prospective randomized clinical trial. Read at the 16th Annual Open Meeting of the American Shoulder and Elbow Surgeons; 2000 Mar 18; Orlando, FL. Paper no 31.


**Open reduction and internal fixation of Upper Extremity fractures in Elderly patients: Distal radius, olecranon, proximal humerus fractures.**

Avoid routine surgical fixation of isolated upper extremity fractures (distal radius, olecranon and proximal humerus) in the elderly unless there are clear indications, goals and benefits. Elderly Wrist Fractures– These comparative studies of distal radius fractures in elderly patients indicate that there is little functional difference between operative and nonoperative treatment.

**Distal Radius Fractures**


**Olecranon Fractures**

Elderly Olecranon Fractures—These case series of olecranon fracture in elderly patients indicate that low demand elderly patients have satisfactory results with nonoperative treatment of displaced and nondisplaced olecranon fractures.

Gallucci GL; Piuzzi NS; Slullitel PA; Boretto JG; Alfie VA; Donndorff A; De CarliP. Non-surgical functional treatment for displaced olecranon fractures in the elderly Bone & Joint Journal. 96-B(4):530-4, 2014 Apr.

Duckworth AD; Bugler KE; Clement ND; Court-Brown CM; McQueen MM. Nonoperative management of displaced olecranon fractures in low-demand elderly patients. Journal of Bone & Joint Surgery - American Volume. 96(1):67-72, 2014 Jan 1.

Veras Del Monte L; Sirera Vercher M; Busquets Net R; Castellanos Robles J; Carrera Calderer L; Mir Bullo X. Conservative treatment of displaced fractures of the olecranon in the elderly Injury. 30(2):105-10, 1999 Mar.

**Proximal Humerus Fractures**

Proximal humerus Fractures—Outcomes of operative versus nonoperative treatment of proximal humerus fractures in elderly patients have shown little difference with higher reoperation rates and complications in the operative group. Surgeons need to consider patients functional demands and potential benefits from surgical intervention.


Rangan A; Handoll H; Brealey S; Jefferson L; Keding A; Martin BC; Goodchild L; Chuang LH; Hewitt C; Torgerson D; PROFHER Trial Collaborators. Surgical vs nonsurgical treatment of

**Physical Therapy**

Due to the positive effects of physical therapy for patients with hip fractures, patients should be mobilized as soon as possible post operatively and allowed to be full weight bearing on injured hip.


**Vitamin D and Calcium for Geriatric Fractures**

Vitamin D and Calcium in all Geriatric patients with fractures – Gundrum Minimize the potential detrimental effects of musculoskeletal malacia (including sarcopenia, osteopenia, secondary hyperparathyroidism, at base-line or as sequelae of injury) in geriatric fracture patients by providing Vitamin D and Calcium repletion/supplementation.


    Pooled data found that 70% of acute fracture patients are Vitamin D deficient

    Oral supplementation with Vit D results in increased serum levels safely

Meta-analysis of published studies from 2011 - 2015 reporting 15% reduced risk of total fractures and 30% reduced risk of hip fractures with calcium/Vit D supplementation


Oral supplementation with calcium and Vitamin D during a 9 week period of high physical activity resulted in increase in bone marrow density of 14% as measured by DEXA

Supports the utility of weightbearing activity in addition to nutritional supplementation in encouraging bone formation