# Radiographic Prevalence of Scaphotrapeziotrapezoid Osteoarthrosis

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**Purpose** To define the radiographic prevalence of scaphotrapeziotrapezoid (STT) osteoarthrosis (OA) in a cohort of patients presenting to a hand surgeon for any complaint. The secondary purpose was to evaluate coexisting thumb carpometacarpal (CMC) joint OA.

**Methods** Seven hundred radiographs were evaluated for presence and degree of STT and thumb CMC arthritic changes in consecutive patients presenting to a hand clinic for any chief complaint over the study period.

**Results** OA was noted at the STT joint in 111 of the 700 (16%) radiographs reviewed. Increased age, female sex, presence of a scapholunate (SL) ligament gap greater than 3 mm, and presence of radiographic thumb CMC joint OA were all significantly correlated with presence of STT joint OA. However, logistical regression analysis demonstrated that only increasing age, presence of an SL ligament gap greater than 3 mm, and presence of thumb CMC joint OA were strong predictors of STT joint OA.

**Conclusions** STT joint OA is a common finding on hand radiographs of patients presenting to a hand clinic. Its prevalence increases with age, the presence of an SL ligament gap greater than 3 mm, and with the presence of CMC joint OA. *(J Hand Surg Am. 2014;39(9):1677–1682.* 

**Type of study/level of evidence** Diagnostic III.

**Key words** Carpometacarpal, prevalence, osteoarthrosis, scaphotrapeziotrapezoid.

OSTEOARTHROSIS (OA) OF THE BASE of the thumb is common.[1,2] The radiographic prevalence of thumb carpometacarpal (CMC) joint OA has been well defined, ranging from 60% to 94% in women older than 80 years. OA of the thumb CMC joint is clinically relevant in approximately 16% to 25% of postmenopausal women.[1,3] The relationship between thumb CMC joint radiographic change and clinical symptoms as well as demographics have been explored.[1,3] However, the radiographic occurrence of scaphotrapeziotrapezoid (STT) joint OA as well as the associated demographic factors (including age and sex) have been studied less extensively.

Bhatia et al[4] studied the STT joint in 73 cadaver specimens with a mean age of 84 years and reported a 30% incidence of arthritic changes. All specimens with STT joint OA also had CMC joint OA, which 75% of the time was equal to or less severe than the STT joint OA. In a cadaveric study incorporating radiographs, North et al[2] found OA of the STT joints of 46% of 68 specimens. The average age was 75 years with nearly equal sex distribution. In a study in which 4,000 wrist radiographs were reviewed, 210 cases of OA in any joint were identified, of which 27% were isolated to the STT joint.[5] In a retrospective review of radiographs and physical examination reports of 100 patients with average age of 61 years

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**FIGURE 1: A** Radiograph demonstrates grade 1 STT joint OA with minimal joint space narrowing of the scaphotrapezial and scaphotrapezoid joints. **B** Radiograph demonstrates grade 2 STT joint OA with scaphotrapezial and scaphotrapezoid joint space narrowing and some preservation of joint space. **C** Radiograph demonstrates grade 3 STT joint OA with scaphotrapezial and scaphotrapezoid joint destruction.

presenting to a hand clinic, Wollstein et al[6] demonstrated STT joint OA in 59%.

The purpose of this study was to determine the prevalence of radiographic STT joint OA in all patients presenting to a hand surgery service at an academic medical center over a 12-month period. We hypothesized that the prevalence of radiographic STT joint OA would increase in frequency with age and occur more frequently in women, similar to observed findings in thumb CMC joint OA.[1]

## MATERIALS AND METHODS

We retrospectively reviewed the radiographs of consecutive patients presenting to a hand clinic at a single institution. The study protocol was reviewed and approved by our institutional review board. All patients presenting to the practices of 2 academic hand surgeons in 2011 were eligible for the study. The presence of wrist radiographs with visualization of the STT joint and radiocarpal joints was required for inclusion into the study. Exclusion criteria were patients younger than 18 years, patients treated for thumb CMC joint OA with excision of the trapezium, and patients with incomplete wrist radiographs.

Radiographs included posteroanterior, oblique, and lateral views of the wrist. When bilateral radiographs were available, only one side was evaluated, alternating the side with each subsequent patient. A single investigator blinded to patient age, sex, and chief complaint evaluated all radiographs. A 3-point grading for rating STT joint OA was used to evaluate each of the radiographs. Sodha et al[1] described this grading scheme in a radiographic prevalence study of CMC joint OA and showed it to have a substantial intraobserver and moderate interobserver agreement, with kappa values of 0.72 and 0.56, respectively. Grade I indicates minimal joint space narrowing. Grade II denotes definite OA with scaphotrapezial and scaphotrapezoid joint narrowing, sclerosis, or osteophytes formation with some joint space preservation; whereas in grade III, 1 or more of the joints are destroyed with complete joint space narrowing, sclerosis, or osteophyte formation (Fig. 1), or all 3. The Kellgren-Lawrence scale[7] was used to grade CMC joint OA with grade 0 indicating no osteophytes,