Background

Metastatic disease is the most common malignant bone tumor [1], with the humerus being the second most common long bone to be involved after the femur [1-3]. This can result in pain, loss of function and pathological fracture. The healing potential of pathologically fractured bone is low, hence the need for operative intervention in many of these patients. A functional upper limb is pivotal to a patients' independence, therefore, preserving limb function is a major goal of treatment.

A review of the literature over the past 20 years has shown a lack of published studies with adequate numbers of patients. Lewallen *et al* [4] reported their outcomes on 54 patients with humeral fractures in 1982. Our study, the largest to date, examines the different types of operative treatments for metastatic disease to the upper limb in 93 patients. Specifically, we have focused on a preferred technique of augmenting rigid intramedullary fixation with cementation.

Patients and methods

Patients with metastatic disease to the humerus who underwent operative treatment were identified from the audit database of the Department of Orthopedics at St Vincent's hospital, Melbourne, a tertiary referral centre for the management of bone and soft tissue tumors. The setting is retrospective and the information was mainly from case records. Bony metastases to the humerus are rare and running a prospective study for many years would be difficult.

The patients were accrued over a 9 year period, from Jan 1996 to Dec 2004. Information was gathered from the medical records and this included patient demographics, site of metastasis, primary tumor, operative details (including length of operation), length of post operative stay and any complications. Outcome measures of pain and function were assessed subjectively by the patients and recorded by the examiner at the time of review. The data was obtained from the most recent clinical review appointment documented in the history. Because of the variability in accurately assessing degree of severity of the pain, we chose to record patients as either having no pain or pain which was causing them discomfort. Patients had restricted function if they were unable to use the affected limb in the usual manner.

Patients

93 patients were identified from our database with 96 operations being performed. 2 patients required revision surgery and 1 had bilateral humeral metastases which were operated on. The median age was 63 (range: 33 – 89) years with 54% female.

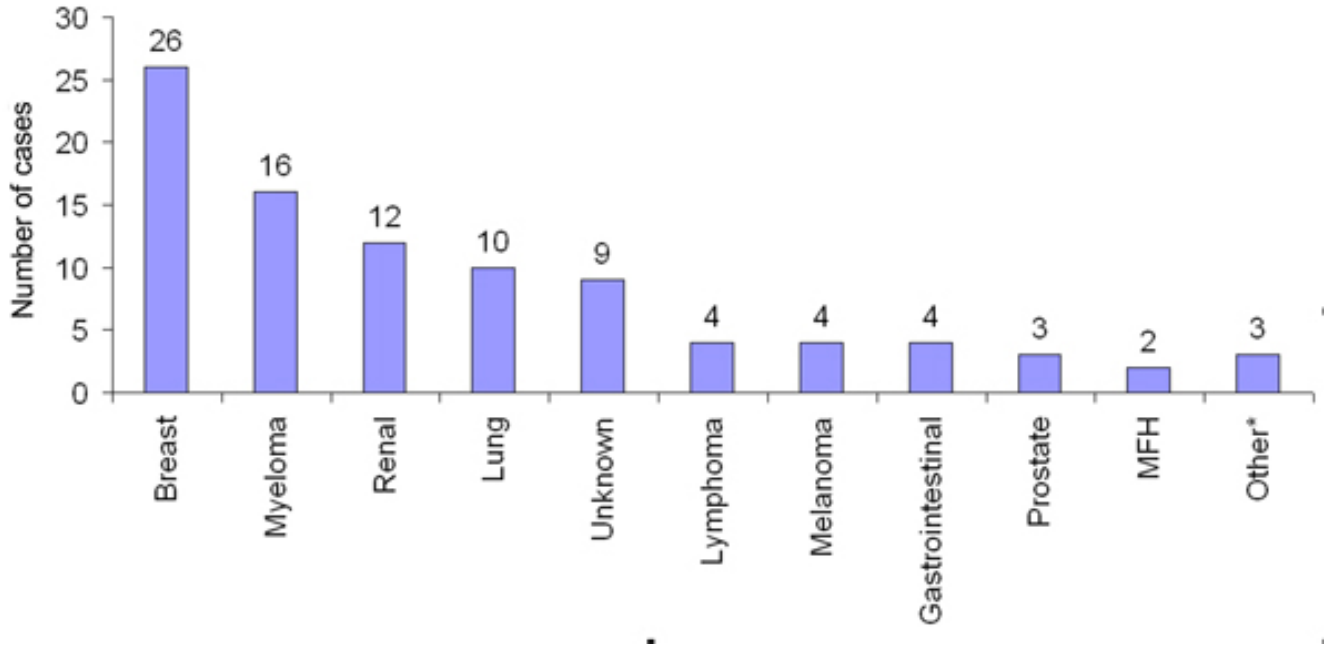

Figure 1

Primary tumors. Primary tumors which have metastasized to the shoulder girdle. The number above the columns represents number of cases.