

INTER- AND INTRA-OBSERVER RELIABILITY OF THE NEW AO/OTA CLASSIFICATION OF INTERTROCHANTERIC FEMUR FRACTURES

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Introduction:

Proximal femur fracture (PFF) incidence is projected to rise to c. 100 000 cases per annum by 2033, NICE guidance on the management of intertrochanteric fractures (ITF) is based on AO/OTA classification of fracture patterns, with compliance against this guidance reported by the annual National Hip Fracture Database (NHFD) report, adherence to NICE guidance also forms a part of Care Quality Commission (CQC) inspections of acute hospital trusts.

The previous AO/OTA classification of ITF released in 1990 and has been shown to have minimal to weak interobserver reliability at both group (e.g. A1 or A2) and subgroup classifications (e.g. A2.2 or A2.3). The revised classification was released in 2018 and redefined the A1 fractures as having a competent lateral wall, with A2 fractures having an incompetent lateral wall. Sub group classification of A2 fractures remained dependent on the number of intermediate fragments present.

Our study aims to assess the inter- and intraobserver reliability of the 2018 AO/OTA classification of PFFs.

Methods:

A multicentre observational study involving three acute hospitals was undertaken. The first 50 patients treated with sliding hip screws (SHS) or cephalomedullary nails (CMN) for AO/OTA 31A1, A2 or A3 fractures after 1st January 2018 at each study centre were identified from local NHFD reports. Anteroposterior (AP) and lateral plain film radiographs were obtained for all 150 study patients from local picture archiving and communication system (PACS) records.

Images were reviewed by six Orthopaedic surgeons of varying seniority; 2 SHOs, 2 Registrars and 2 Consultants. All were blinded to the intra- and post-operative imaging and hence were blind to the treatment undertaken for each patient. Fractures were classified independently by each reviewer in line with the latest edition of the AO/OTA classification and then classified once more after a minimum period of 3 months had elapsed,

Cohen's kappa (κ) was calculated for inter- and intraobserver reliability for each fracture. First-round classifications were used for calculation of inter-observer correlation

Results:

The mean κ value for group (31A1, 31A2 or 31A3) interobserver classifications was 0.479 (0.335 – 0.771), interobserver reliability reduced when sub group classifications were assessed with a mean κ of 0.376 (0.223-0.613).

Mean intraobserver reliability was similar for both group and sub-group classifications at 0.661 and 0.587 respectively.

Discussion:

This study has demonstrated a weak (0.479) and minimal (0.376) overall interobserver reliability for the new AO/OTA group and sub-group classification of PFF respectively, with moderate intraobserver reliability for both group and sub-group classifications (0.661 and 0.587 respectively).

Our results have shown that the reduction in interobserver reliability between group and sub-group classifications is substantially lower than with the previous AO/OTA classification system for intertrochanteric fractures. However, this is largely attributable to the reduced interobserver reliability of the new group classification, rather than improved reliability of the sub-group classification. Despite the reduced interobserver reliability of the new group classification, this study's results still demonstrate a greater interobserver reliability than those achieved by the Jensen, Evans, Kyle and Boyd classifications of ITF.