



**Fig. 4a** Follow-up: 3 months; **b** Follow-up: 9 months

ate the management of pertrochanteric fractures of the femur using this nail.

**Material and Methods** 103 consecutive patients who had suffered a pertrochanteric, intertrochanteric or high subtrochanteric fracture, or a combination of fractures were treated by closed reduction internal fixation by Docet XT nail from May 2007 to May 2008 (Figs. 3 and 4)

**Results** Our preliminary results indicate a surgical time 30 min (min 15, max 50), X-ray exposition 10.3 s (min 10.0, max 40.0), the Failed distal locking ( $n = 0$ ), superior cut-out of lag screw ( $n = 0$ ) and postoperative varus malreduction ( $n = 1$ ).

**Conclusions** Docet XT nail is a suitable implant for management of pertrochanteric fractures of the femur.

#### A NEW ENDOMEDULLARY NAIL FOR PROXIMAL HUMERUS FRACTURES, THANKS TO THE PARTNERSHIP OF ITALIAN UNIVERSITY HOSPITAL AND INDUSTRY RESEARCH

U. Tarantino, G. Cannata

Department of Orthopaedics and Traumatology, University Hospital Policlinico Tor Vergata (Rome-IT)

We developed a new endomedullary nail for osteosynthesis of proximal humerus fractures, hand in hand with Citieffe from Calderara di Reno (Bologna). Relying upon our previous experience with similar implants, for which we had already assessed qualities, restraints and flaws, we aimed at overcoming problems concerning the hold of the implant also in bad quality bones, easily adapting the implant to various types of fracture, and simplifying the operation technique while enhancing accuracy and minimizing invasivity of the operation at the same time.

“Dinamic T Omero” titanium nail is cannulated, anatomic, and provided with holes for five proximal screws, with a retention system that reduces the risks of screw pull-out without seizing. The first three screws, facing the joint surface, are fan-type directed on different planes and are threaded for a spongy bone; similarly threaded is a fourth screw sagittally directed. The fifth screw of the proximal group is directed in such a way to compact the humeral head on the “medial hinge”. Both static and dynamic locking can be made distally. All the screws are provided with a head that attaches firmly to the proper screwdriver, reducing the risks of wrong directions and preventing the loss of the screws in surgical paths.

The screw head is also threaded externally, to achieve better hold and low-profile implant. A nail cap is available in three lengths, which besides protecting the attachment of the upper end of the nail for extraction, allows inserting it to the depth required in each single case: it also attaches to the screwdriver, therefore it is impossible to loose it in soft tissues, or even worse, in the humeral head while screwing. Before inserting the three cephalic fan-type directed screws, three “phantom” wires are inserted through the nail, which enable the surgeon to evaluate in advance the final positioning of the screws and their hold, using fluoroscopy also in axillary and continuous views. The external guide allows inserting additional screws tangent to the nail to synthesize loosen fragments of trochitis (“out-nail” screws): this system is compatible with the Rondò cannulated screws which include a constrained and tilting washer. The insertion system facilitates the correct positioning of the guide wire while minimizing dissection of soft tissues.

Our preliminary experience with Dinamic T Omero nail, about to be widened by a multi-center evaluation, has confirmed the validity of our premises and the successful achievement of the predetermined targets.

#### FEATURES OF A MODERN EXTERNAL FIXATION SYSTEM

B. Pavolini, R. Passalacqua

ASL1 di Massa e Carrara (Massa Carrara-IT)

External fixator CITIEFFE F4 is the synthesis of the experience acquired in 25 years of use of previous fixator ST.A.R. 90. The fundamental concepts behind fixator ST.A.R. 90 project are practicalness of use and versatility, both aimed at maximizing the effectiveness of treatment; the main characteristics of the system were: a pre-assembled body capable to make micrometrical reduction movements and axial sliding movements for callus dynamization, freedom of choice concerning the point of pin insertion and the possibility of positioning them on different planes, and varied kit accessories.

Over the years, due to the demand of increasingly improved performances, a remarkable potential for improvement of this range of products has been found and developed, which has resulted in the design of fixator F4. This fixator maintains the positive features of fixator ST.A.R.90 enhancing significantly both performances and possible applications, thus proposing a real fixation “system”, profitably usable in most traumatic pictures as well as in conventional preferred indications.

The main attributes of this system can be summed up as follows: (1) versatility in assembly, which means being capable of performing a monolateral assembly with a reduced number of fiches as well as complex three-dimensional assemblies to cope in facts with any traumatic pictures; (2) a simple system, which includes a limited number of basic components, usable in all assemblies, and allows adding further components only when necessary, providing a gradual learning curve; (3) the possibility of making a series of corrections to optimize treatment; in particular it is possible to perform the rotary correction of the segment treated.

Authors explain the critical and industrial process that originated from fixator ST.A.R. 90 to develop and introduce fixator F4, pointing out, in particular, the interaction between clinical and engineering aspects and the invention of those components enabling surgeons to overcome some particular traumatic conditions.

#### EXTERNAL FIXATION FOR INTRA-ARTICULAR DISPLACED CALCANEAL FRACTURES

B. Magnan, E. Samaila, G. Viola, P. Bartolozzi

Orthopaedic Department, University of Verona (Verona-IT)