Conferences and Events

Please contact your Aesculap sales specialist if you are interested in further details.

▪ Interlocking nailing course for surgeons Academy Course in Berlin	25 - 26 February 2013
▪ Expertise in interlocking nailing, Nice / France	18 - 19 April 2013
▪ ESTES, Lyon / France	04 - 07 May 2013
▪ EFORT, Istanbul / Turkey	05 - 08 June 2013

PREVIEW

Targon® Bulletin
August 2012 edition

Targon® PFT short nail application at the Dresden University Hospital

TB: Dr. Winkler, as Senior Consultant at Dresden University Hospital you have used the Targon® PFT for trochanteric femoral fractures for years. What criteria do you use to choose between a Targon® PFT standard or short nail?

Dr. Winkler: We have been using the Targon® PFT for two years. The short nail, measuring 175 mm, is preferable for all peritrochanteric A1, A2 and A3 fractures, excluding reverse A3 fractures. The Targon® PFT standard nail, measuring 220 mm, is used in cases of trochanteric fractures that have not yet become subtrochanteric, and can be fixated distally using the targeting device. We use the long nail for complete subtrochanteric fractures. In general, the extent of subtrochanteric fracture and the curvature of the femur determine the nail length.

TB: How have you assessed the short nail specifically in terms of nail design, minimal invasiveness and surgical technique?

Dr. Winkler: The short nail is not only slimmer, it is also straighter with only a 4° valgus angle, thereby making it easier to insert. Additionally, I appreciate the excellent preparation of the Targon® PFT system nail entry ports through the use of hollow trephines.
Conventional entry reamers often only create a large cavity in the region of the fracture, and the nail is then inserted through the fracture.
The various nail diameters of Targon® PFT also offer good treatment options for individual medullary widths. The implant can easily be slid over the relative tip of the nail during introduction.

TB: In summary, what are the advantages that you see of the Targon® PFT short nails in the management of trochanteric femoral fractures?

Dr. Winkler: Our experience with the short nail indicates very good results. I cannot give exact numbers at present, but overall, complications such as secondary femoral fractures or cut-outs tend to appear less often. We have seen no secondary femoral fractures with the short nail to date.

TB: Dr. Winkler, thank you very much for this interview.

PD Dr. med.
Hermann Josef Bail

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Brochure No. 046402 0812/1.5/1

Targon® Bulletin
August 2012 edition

B|BRAUN
SHARING EXPERTISE

Aesculap Orthopaedics

Dr. Martyn J Parker, FRCS (Edinburgh): **Results and surgical tips for Targon® FN, Peterborough, England**

The new implant of the Targon® FN is a unique implant designed specifically for the fixation of intracapsular hip fractures. Since its launch the use of the Targon® FN continues to spread rapidly such that it is now being used in many centres around the world. Encouraging reports presented so far from the United Kingdom, France and Israel have suggested the fracture healing complication rate to be about half that of previous fixation devices (multiple cancellous screws, Hansson pins or the sliding hip screw). We are therefore always interested to hear reports of the complication rates and experience with this new implant from other centres.

Results

My results so far achieved with the Targon® FN can be compared against previously published results for multiple cancellous hip screws (references 1,2,3). These are summarised in the table on the next page. The results confirm that the Targon® FN has about half the fracture healing complication rate than that incurred with cancellous screws and supports those results from the first journal publication of results for the Targon® FN (reference 4).

Surgical tips

1. Patient selection

The choice between internal fixation and arthroplasty for an intracapsular fracture remains controversial. In many cases it will be decided on an individual patient basis.

Possible indications for internal fixation are:

- Undisplaced and minimally displaced fractures
- Displaced fractures in young patients (aged less than about 65-75 years)
- Displaced fractures in the very frail (considered unfit for arthroplasty)
- Displaced fractures in males (lower risk of fracture healing complications)

2. Fracture reduction

Most fractures are readily reduced using the fracture table to apply gentle longitudinal traction followed by internal rotation.
The commonest mistake surgeons make is a failure to apply sufficient internal rotation to fully reduce the fracture on the lateral view (Fig. 1).

Dear Targon® user,

Hip fracture, an injury most commonly associated with osteoporosis, is a topic that is currently dominating – and will continue to dominate – the area of fracture management. The industry is called upon to provide suitable implants and instruments that will permit the most straightforward and cost-efficient treatment possible.
Targon® FN, for medial femoral neck fractures, and Targon® PFT, for all trochanteric and subtrochanteric fractures, were designed specifically with these requirements in mind and have now also proven exceptionally successful in clinical practice.

Experience reports from Nuremberg and Dresden on the Targon® PFT indicate that this modern implant system is able to meet the greater demands for ever more complex fracture management while simultaneously reducing operating time. Results from Peterborough, England, relating to Targon® show about 50 % fewer complications than with cannulated screws.

I'm sure you will find this an interesting read,

Doris Zimmermann,
Trauma Product Manager
Orthopaedic Marketing
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	Targon® FN screws		Cancellous screws	
	Undisplaced fractures	Displaced fractures	Undisplaced fractures	Displaced fractures
Number of patients studied	161	293	565	568
Fracture non-union	3 %	12 %	9 %	30 %
Avascular necrosis	3 %	7 %	4 %	9 %
Fracture below or around the implant	0 %	2 %	0.3 %	1 %
All fracture healing complications	6 %	21 %	13 %	40 %

3. Skin incision

For an undisplaced or 'impacted' fracture, no reduction manoeuvres are required and the limb can be placed in the fracture table with the patella facing to the ceiling or slight internal rotation. This will bring the plane of the femoral neck almost horizontal. The optimal skin incision is then the most lateral part of the thigh, just distal to the greater trochanter.

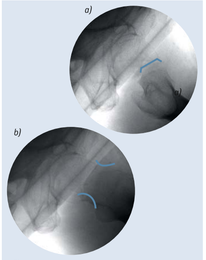

Fig. 1:
a) Partial reduction of the fracture but the fracture surface outlined is not fully reduced.
b) After complete reduction achieved by full internal rotation of the limb to restore the smooth curves around the femoral neck.

For a displaced fracture, internal rotation is invariably used to reduce the fracture. This means the plane of the femoral neck is now directed downwards. The optimum skin incision is no longer the most lateral part of the thigh, but has moved slightly more anterior to this. Following the skin incision the approach to the femur is slightly downwards so the plate can be positioned in the correct part of the femur and the guide wires inserted into the centre of the femoral neck and head in a downwards direction.

4. Positioning the first guide wire

The most difficult part of the surgical procedure is to position the first guide wire that goes in the central hole of the jig. The wire needs to be in the centre of the femoral head and neck in both anterior-posterior (AP) and lateral view. In addition it needs to be central at the lateral femoral cortex so the plate is correctly positioned on the side of the femur. A smaller angle guide as illustrated may make the positioning of this first guide wire easier (Fig. 2).

5. Correction of small degrees of angulation

Often the first guide wire is well positioned on the AP X-ray, but when the lateral view is checked it is directed slightly anteriorly or posteriorly. This can be corrected by leaving the first wire in place and when the second guide wire is inserted just lift or depress the alignment jig slightly so the second wire is placed in the correct position. This may mean the first guide wire is bent slightly. The same adjustment is made for inserting the third and if necessary forth guide wire. The first guide wire can then be discarded (Fig. 3).

Fig. 2: Angle guide KT232R

6. Diagonal guide wires

As a general rule if two of the guide wires placed in the jig in the slots diagonally opposite to each other, are in the correct position within the femoral head and neck, the other two guide wires will also be in the correct position. It is possible to use these first two guide wires to measure the length of the TeleScrews and then to drill the empty guide holes and insert the TeleScrews.

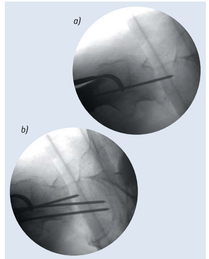

Fig. 3:
a) Initial guide wire is anterior on the lateral view
b) The jig is angulated slightly with the first wire in place so that the subsequent wires are in an acceptable position in the centre of the femoral head.

7. Checking the plate is on the femur

During surgery, before the first TeleScrew is inserted the plate may slip laterally off the femur. This will result in an incorrect measurement of the TeleScrews being made.

In addition as it is a locking plate, it will mean if the TeleScrews are inserted at this time the plate remains without any contact with the bone. Gentle pressure on the jig will ensure the plate remains in contact with the bone.

8. Correct positioning of the tips of the TeleScrews

To achieve the strongest hold on the femoral head the tips of the TeleScrews should be about 3-5 mm from the articular surface. This enables the treads of the screws to be placed in the subchondral area of bone, which gives the strongest hold.

Areas of uncertainty for intracapsular hip fractures

1. Aspiration of fracture haematoma

After an intracapsular fracture there will be a haematoma around the fracture site. If the capsule is intact this may cause an increase in pressure in the joint, which by its tamponade effect will reduce the blood flow into the femoral head. Clinical studies have shown this pressure may be as high as 320 mmhg. Pressures tend to be higher for undisplaced fractures, possibly due to the reduced likelihood of a capsular tear.

Needle aspiration of the hip has been shown to reduce the intracapsular pressure, but as yet no study has demonstrated this will reduce the risk of subsequent fracture healing complications, particularly that of avascular necrosis of the femoral head. Some surgeons even recommend a small open capsulotomy through an anterior approach to the hip to remove this fracture haematoma and decompress the hip joint. To date the benefit for this in clinical studies has not been demonstrated.

During Targon® FN screw fixation it is of course possible to aspirate the hip with a large bore needle inserted from an anterior / lateral position. An alternative would be to open the capsule using scissors passed up just anterior to the femoral neck, from the incision used to insert the TeleScrews.

2. Two, three of four TeleScrews

To date there are no clinical studies on this topic to determine which is the best number of TeleScrews to use. General advice is to use three screws for most cases. For those with a large femoral neck and a displaced fracture four screws should theoretically give a stronger construct. For those with a very small femoral neck two screws should suffice.

3. Weight bearing after surgery

There has been very little scientific research on this subject for hip fractures. What limited evidence there is suggests there is no benefit from restrictive weight bearing regimes after surgery. In fact there is some evidence to suggest that asking the patient to be non-weight bearing may even increase the forces around the hip, as the power of the muscles acting across the hip exceeds those of the forces associated with weight bearing.

Therefore, routine practice should be to allow all patients to full weight bearing after surgery. In practice, because of the pain around the hip the patient will weight bear as able. As the hip becomes less painful then full weight bearing is achieved. For the younger patient with a displaced intracapsular fracture it may be reasonable to restrict these patients to partial weight bearing for a period of 4-8 weeks. This restricts the patient from undertaking too excessive activities and may reduce the risk of excessive collapse occurring around the femoral neck.

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Targon® Bulletin
August 2012 edition

PD Dr. med. Hermann Josef Bail: Targon® PFT – Experience report from Nuremberg Hospital, Location South

Since the introduction of the new Targon® PFT system at our hospital, it has been implanted in 679 procedures in total. In 454 of these cases we used the standard nail (220 mm long), we used the short nail (175 mm long) in 57 cases and the long PFT in 168 cases. In terms of fracture classification, 129 of the cases treated were A1 fractures, 394 were A2, 81 were A3, 34 were subtrochanteric fractures and 41 were pathological.

The new nail system for proximal femoral fractures has, on the whole, proven itself in clinical practice.

After an initial familiarisation period, the surgeons became so used to the new Targon® PFT range that, on average, shorter operating times were achieved. The colour coding and better tray arrangement help the surgical nursing staff to find their way around immediately, even during staff changeovers. The new sleeve locking has proven especially useful for distant dorsal introduction angles.

The targeting device design permits shorter incisions, particularly proximally and especially for slimmer patients. In obese patients, the new design of the targeting bow permits minimal soft-tissue impingement.
The fact that the lag screw and sleeve are connected to one another with the new TeleScrew, which could theoretically also lead to a reduction in operating time, was not measurable, but may well have positively influenced the noticed reduction in operating time.

Determining the correct length of the TeleScrew initially proved problematic. This is particularly difficult as the implant comes in sterile packaging and must be discarded after use in the patient. Initially, in addition to the increase in costs, this also resulted in a temporary increase in operating time. Various possible causes for the incorrect determination of length were discussed.

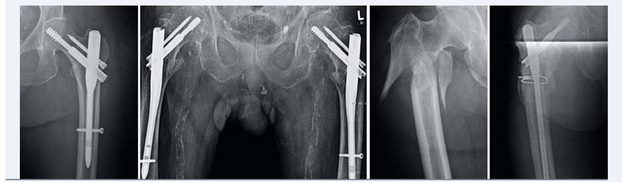
First, it should be noted that the TeleScrew length measurement only has a 5 mm tolerance. This is the distance to which the lag screw can be screwed in towards the centre, meaning that a preset sliding distance of 15 mm can be extended to 20 mm. If the TeleScrew is too long, turning the screw back cannot be recommended because, on the one hand, the sliding distance is shortened, leading to earlier onset of the high-riding screw phenomenon and, on the other, the secure seating of the screw would be compromised if it were to be unscrewed from its osseous bed in the femoral head. The first measure taken by Aesculap was to change the measurement tolerance of the PFT to an exact length measurement.
This means that the guide wire has to be placed in the exact position in which the lag screw will lie. The problem remains, however, that the nail in the proximal femur can sometimes have marked differences in size (e.g. 1.90 m for a large man versus 1.45 m for a small woman) leading it to lie at differing distances from the outer cortex. This problem can be resolved by making the length measurement with the graduated drill bit. With this technique, you use a depth stop configured to the shortest length to drill safely up to the nail. This should be performed under image intensifier control. The green locking ring is then detached and the graduated drill is used to drill exactly up to the planned lag screw position.

The depth stop then passes over the step drill and indicates the exact length of the TeleScrew to be used. An alternative option is to use the lateral access drill. This is intended for drilling hard bone (in young patients for example).

However, it can also be used in much the same way as the centring awl was formerly used; to assist in length measurement. Since the drill has a stop in the nail and always comes to rest at the same distance from the nail, it can be used to measure the length with the help of a precisely positioned guide wire.
Hence, introducing the guide wire as precisely as possible is crucial to the success of the surgical procedure. It is not unknown, however, for the guide wire to ascend into the femoral neck and femoral head.
In such circumstances, it is recommended to use the graduated drill method mentioned above for the length measurement.
In these cases, the graduated drill can be carefully introduced over the guide wire until it comes into contact with the nail, provided that an antirotational mechanism is in place (antirotation pin and with theatre assistants securing the aiming jig), and, after withdrawing the guide wire, drilling can be continued with the graduated drill bit.

A statement cannot be made at this time on the efficacy of these additional measures in preventing cut-out or cut-through. Clinically controlled and, ideally, prospective studies would be required for this purpose. From the procedures we completed, however, it would appear that the optimisation of, for example, the thread and surface of the lag screw, as well as an improved sliding mechanism due to a guaranteed long guidance of the lag screw in the sleeve, has led to the implant properties, which were already good, being improved further. Thus, of the 679 procedures we performed, we recorded 6 cut-outs or cut-throughs, which equates to a rate of 0.9 %, compared to 2.3 % with the Targon® PF. The revision rate of 6.3 % was comparable to that of Targon® PF (6.8 %).
These figures should, however, be regarded as representative of the clinical observations of a series of cases, rather than a scientific study.

Overall, the surgical technique has been simplified, but is also more constrained. In our experience, the Targon® PFT represents a reliable and well-designed implant for treating trochanteric and subtrochanteric fractures, which are becoming increasingly more prevalent. The large number of implant options (CCD angle, nail length, nail diameter) means that the implant can be optimally adapted to the osseous conditions of the individual patient. Through use of the short nail (175 mm long, proximal diameter reduced, flattened profile on interior and exterior), we were able to significantly reduce the number of boring operations. The fact that there have been no cases of nail breakage in 679 procedures indicates the possible positive effects of strengthening the nail at the site where the TeleScrew is inserted. At our hospital, the Targon® PFT, just like the Targon® PF before it, has proven highly successful in everyday use. We were able to resolve the initial problems with length measurement by taking the above-mentioned measures and observing the reduced measurement tolerance of the TeleScrew. The further optimisation measures, specifically those for use in osteoporotic bone, appear to have paid off.



Targon® PFT short nail — Targon® PFT standard nail — Targon® PFT long nail

Clinical results with Targon® PFT in Nuremberg

Targon® PFT				
Total number of operations	679	454 standard nail	57 short nail	168 long nail
Cut-out rate	0.9 %	PF: 2.3 %		
Re-operations	6.3 %	PF: 6.8 %		
Advantages of PFT:	■ No nail breakage in 679 cases ■ Shorter operation times ■ Shorter incisions ■ Less intraoperative soft tissue impingement ■ Less drilling required (slimmer short / long nails). ■ A more simplified and stringent operating technique			

Conclusion: Excellent clinical results with Targon® PFT. The PFT system is particularly suitable for use in osteoporotic bones.