

Universitatea de Medicină și Farmacie
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SOROT

Abstracts

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Gerhard Küntscher Society



David Seligson - The Art of Gerhard Kuentscher.

Throughout his career Kuentscher sketched. His drawings are in his books, in museums, in contemporary papers. A trove of his artwork was recently found in his papers in Kiel. These drawings can be considered in three categories - technical illustrations for the treatment of fractures, caricatures of his friends and associates, and thirdly illustrations of the political circumstances of his times. These drawings reveal not only the talents of Gerhard Kuentscher as an illustrator but also are a window into his character.

Acad. Nicolae Gorun, dr. Radu Popa, dr. Radu Alexandrescu, dr. Gabriel Tudor, dr. Alexandru Florian Grecu, dr. Ștefan Andrei, dr. Lucian Diaconescu, dr. Iuliana Andrei - From Kuentscher Nail to Locking Nail for Fracture of Femoral Shaft in Romania: our Experience for 55 years.

Abdullah Demirtaş, Esat Uygur, FuatAkpınar - Can complications of distal locking be reduced with InSafeLOCKhumerus nail in the treatment humeral shaft fractures?

In this study we aimed to investigate whether the difficulties and complications related to distal locking during intramedullary nailing of the humeral shaft fractures can be reduced by InSafeLOCK Humeral Nail.

Methods

The hospital records of 24 patients' (11 males, 13 females; mean age; 56, range: 20-86) who were operated on with InSafeLOCK Nail were examined retrospectively. 10 of the fractures were Type A, 9 were Type B and 5 were Type C fractures, according to ArbeitsgemeinschaftfürOsteosynthesefragen (AO) classification. 21 of the patients were close fracture and 3 of them were Gustilo-Anderson Type 1 open fractures. In 18 patients the fractures were reduced closely. The mean follow-up period was 14.4 (range: 4-30.5) months.

Results

Mean duration for distal locking was 2.1 (range: 1.2-3.1) minutes. In three patients (12.5%) we had complications during nailing because of paying no attention to the recommended technique. One (4.1%) patient developed rotational instability in time, due to excessive osteoporosis despite posterior cortex was stabilized. One (4.1%) patient had nail breakage at the nail distal part of the nail (at the oval hole of the Endopin) after the exposing to a new trauma.

Conclusions

When InSafeLOCK Nail is used in accordance with the recommended technique, it can be applied safely and easily without damaging soft tissues around the elbow due to the internal distal locking feature which can be applied without the need for fluoroscopy or guideline.

Wilhelm Friedl - New Multidirectional Angular Stable Plate Fixation In Transcondylar Humerus Fractures (Trochliis Plate)

Introduction

The fixation of the Trochlea is very difficult if there is a fracture line between trochlea and medial column and medial epicondyle. All actual plates reach only to the distal level of the medial epicondyle. So fracture dislocation can occur. A direct transverse angle stable fixation of the trochlea and also of the entire articular block in multifragment situations can be performed only with a different plate design which have a 90 degree angulation between the articular block and the medial column fixation.

Objectives

We developed a plate which allows a direct transversal multidirectional screw fixation of the trochlea and the articular block and proximal the simple anteroposterior fixation of the medial column and of isolated epicondyle fracture fragments. (Trochliis plate) For the radial column a typical anatomical adapted plate is used.

Methods

In a pilot study the Trochliis plate was used in 10 patients. Right and left, small and large plates with short or long length depending on the metaphyseal extension of the fracture were used. So 4 types of plates for right and 4 for left are used.

In all cases after open transulnar articular reduction and temporary K wire fixation the plates were fitting anatomically and allowed fixation even in very complex transcondylar impaction fractures. Also very ventral trochlea and capitulum can be fixed with angular stability.

The Ulnar nerve is repositioned over the plate because the screw heads are in the plate level.

Results

In this pilot study in no case redislocation, instability or infection occurred. In one open fracture a hematoma revision was necessary but healing was uneventful.

All fractures showed a stable healing at 6-9 weeks.

Conclusions

The new design of the Trochliis plate allows a very stable fixation of very difficult transcondylar, especially trochlea fractures and avoid the joint replacement in these often considered as unreconstructable fractures.

Aleksandar Stefanov, Radoslav Petrov, Dian Enchev - Complications after internal fixation with plates in radial and ulnar shaft fractures

Introduction

Diaphyseal forearm fractures account for up to 10% of all fractures in adults. Open anatomic reduction and internal fixation is currently the standard for treatment. The aim of the present study is to evaluate the incidence of complications following internal fixation with plates in forearm shaft fractures.

Material and methods

This retrospective single-center study includes 303 patients (183 men, 120 women) aged 19 to 91 years (mean age 42 years) with forearm shaft fractures who were treated with plating in a level-1 trauma center during a six-year-period (2013-2019). The mean follow-up was 12 months. Fractures were classified according to AO/OTA classification. Open fractures were present in 32 cases (10%). Open reduction and internal fixation with plates was performed in all cases. Temporary external fixation was used in 16 cases (5,3%). The functional outcomes were determined by the QuickDASH test.

Results

Anatomical reposition was achieved in 268 cases (88%). The overall complications rate was 8,2%. Common complications were nonunion and débricolage – 7 cases (2,3%). Compartment syndrome was observed in 1 patient (0,3%). Postsurgical infections and malunion were present in 5 cases (1,7%) and there were 10 periimplant fractures (3,3%). The incidence of correctional osteotomies was 5. Nerve injuries were reported in 2 cases (0,6%).

Conclusions

Plate osteosynthesis in radial and ulnar shaft fractures in adults is an effective, although demanding method for surgical restoration. Intramedullary nailing is promising but often associated with torsional instability and cast bearing. Hence, plate fixation still represents the gold standard for treatment of this pathology.⁷²).

Yavor Pukalski, Parvan Yaney, Mihail Rashkov, Florian Schmidutz, Ivan Zderic, Christoph Sprecher, Geoff Richards, Boyko Gueorguiev, Asen Baltov, Dian Enche - Influence of titanium elastic nail pre-contouring on the fixation of paediatric diaphyseal forearm fractures

Introduction

Growing incidence of paediatric diaphyseal forearm fractures, as well as an increasing number of cases treated with elastic stable intramedullary nailing have been reported. The aim of this study was to evaluate the influence of titanium elastic nail (TEN) pre-contouring on the postoperative radiographic outcome in AO PCCF 22-D/4.1 fractures.

Materials and methods

Twelve paired human cadaveric forearms with simulated AO PCCF 22-D/4.1 fracture were assigned to 3 groups for TEN fixation with the use of either two straight nails (Group 1), 1 curved radial and 1 straight ulnar nail (Group 2), and two curved nails (Group 3). Same specimens were used in Group 1 and 2 by exchange of the radial nail only. Radial length and angulation (RA), as well as maximal radial bow (MRB), its location (LMRB) and rate in percentage of the radial length (%MRB) were measured on anteroposterior x-rays in intact and instrumented state of each specimen.

Results

Overall, the three groups differed significantly with regard to MRB, %MRB and RA ($p < 0.001$); Group 3 showed 0.73 mm increase in MRB ($p=0.073$), 0.36% increase in %MRB ($p=0.068$), and 2.01% decrease in LMRB ($p=0.272$).

Conclusion

Use of TENs of identical size and curvature ensures superior reduction of AO PCCF 22-D/4.1 fractures. In contrast, fixation with 1 curved radial and 1 straight ulnar implant leads to overcorrection of the radial bow, whereas utilization of 2 straight TENs leads to inferior outcomes, including straightening of the MRB and anticipated loss of range of motion in the clinical scenario.

Esat Uygur - The preliminary report of internally locked ulna nail

Introduction

Intramedullary nailing is getting popular in forearm fractures. Different from classical forearm nailing, the nail is secured by performing distal locking by a long screw driven from the proximal end of the nail. By this way distal locking becomes less problematic both for patients and also for the surgeon.

This study aims to evaluate the outcomes of the nail.

Material and methods

Patients operated on because of ulna fracture between April 2016 and April 2018 were retrospectively analyzed. The data of the patients were reached from hospital records.

Type of the fracture (open/closed), healing of the fracture, reduction type (open / closed), any complication were noted.

Minimum follow up duration was 6months.

Clinical and radiological outcomes were assessed according to Grace&Eversmann score.

Results

14 (3 female, 11 male) patients were included. The average age of the patients were 35.5(16-61). Seven (50%) patients had both-bone fractures and accompanied radius fractures were treated by radius intramedullary nail.

2 patients had type I (Gustilo-Anderson classification) open fracture. During the surgery open reduction was done in half of the patients.

The mean union duration was 4.2(3.6-4.5) months. Excellent outcomes were found in 11patients while good results were found in 3 patients according to Grace&Eversmann scoring. Supination were limited in those 3patients.

No complication was seen.

Conclusion

As a preliminary report, intramedullary ulna nail with new innovational locking system seems to be used safely. It is also reliable with good clinical and radiological outcomes.

Dan Cristian Grecu - Ribs Graf in Treatment of Non - Union of a Forearm Fracture

We expose a method of treatment after failure of surgery for a forearm non-union.

The aims was to restore the length armony of the forearm bones and both the curvature of the radius.

The reduction of bone fragments was done and after that osteosynthesis was done with K wire which provide a fare stability, both transverse and rotational.

We used fresh bone autograft harvested from ribs: very good biological quality (one of the last who loose red bone marow), splited in two and bridging the site of non union; fixed with absorbable cerclage. Small remained bone chips filled bone gap.

Stability was completed at the end with over the elbow plaster for 7 weeks.

The result was good: 140° supine and 10° lack of extension.

Ciprian Bardas - Locking Compresion Plate in Treatment of Distal Radius Fractures

Introduction

Distal radius fractures are most common treated fractures in our clinical practice. Fractures associated with high-energy trauma are occurring in younger people, mostly males, and fractures associated with low-energy trauma are occurring in older persons, mostly females.

Materials and Methods

The study was conducted retrospectively on a total of 32 consecutive patients between January 2016 to May 2019. Only the osteoporotic fractures were admitted in the study. Main indication of open reduction and internal fixation with locking compression plates was a postreduction radial shortening of 3 mm, dorsal angulation of 10° or more, intra-articular displacement over 3 mm. The evaluation of the patients was performed considering the radiological outcome, the range of motion in the injured wrist and the presence of pain or other disability at three months after surgery.

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Results

The radiological consolidation appeared after a mean of 6 weeks, the consolidation rate was 93.75% at 6 months. A good range of motion of the wrist was obtained by most of the patients at three months after surgery. One patient developed a complex regional pain syndrome, 3 poor postoperative reductions were noted and a loss of fixation. No infections or other major complications were encountered.

Conclusions

Using the locking compression plates in treating distal radius fractures offers the possibility of obtaining good results in complex fractures for osteoporotic bones with few complications.

Wilhelm Friedl, Jonas Gehr - Prospective Evaluation of Complex Olecranon fractures. Osteosynthesis with the XS nail

Introduction

The olecranon is exposed to high tension and bending forces. In 2/3 multifragment fractures occur. Tension belt and plate fixation in these not only transverse but also sagittal and frontal plane fractures is often not possible. As a central weight bearing device the XS 4,5mm nail is exposed to a lower bending moment and a angle stable transverse fixation with 2,4mm threaded wires every 9mm is possible. Also a soft tissue independent fracture compression with a set screw (proximal longitudinal holes) is possible. Additional frontal and sagittal plane fragments can be fixed to the system with fibre wire hemicerclages.

Material and Methods

From 5.1999 to 12.2002 78 consecutive cases with XS nail osteosynthesis of a olecranon fracture were treated and 73 (91%) could be re-examined clinically and radiological 15 months after surgery. 13,7% were open fractures 67% were 3 or more part fractures. For evaluation the Murphy score was used. In a second series 2003-2006 110 cases with Olecranon XS Nail osteosynthesis were re-examined after 3-6 years.

Results

The mean time for surgery was 37min for two part and 56 min. for more part fractures. The Murphy score showed in 64% very good and in 29% good results. Only in 4 patients with more part fractures with additional radius head fractures and previous surgery had fair or unsatisfactory results. Also after 6 years 90% had good and very good results.

Conclusions

The XS nail is a new concept for stabilisation of all but specially of complex and very comminuted olecranon fractures with a very low complication rate and good functional results.

Wilhelm Friedl, Jonas Gehr - Intramedullary Osteosynthesis with the XS-nail in Ulna shortening Osteotomy

Clinical Problem

Ulna longer than radius can appear posttraumatic or as preexisting condition. It leads to impingement of discus ulnaris and secondary to wrist problems. For shortening osteotomy of the ulna oblique resection and plate and compression screw osteosyntheses are usually used. Instability, osteotomy pseudarthrosis and soft tissue problems due to thin soft tissue coverage are common problems.

Material and Methods

In a series of 8 patients ulna shortening was performed with a intramedullary locked angle stable compression nail system between 2002 and 2006. The XS nail has a 4,5mm diameter and is locked proximal and distal to the osteotomy with 2,0 or 2,4mm threaded wires. A compression screw inserted in the nail allows compression of the osteotomy performed at a 90 degree angle to the ulna shaft direction. The intramedullary locked nail gives higher stability and the compression a circumferencial bone comprssion of the osteotomy.

Results

In no case pseudarthrosis or implant failure occurred. In three patients with too long threaded wires however soft tissue irritation occurred. In 10 patients finally the nail was removed

Conclusion

The XS nail is a safe and stable method for ulna shortening osteotomy. Special attention must be given to the correct length of the threaded wires.

Lucien Reclaru, Alexandru Florian Grecu, Dan Cristian Grecu - Use of Antimicrobial Metals and Alloys in Medical Devices Intended in Contact with Patients.

Ștefan Cristea, St. Cuculici, Fl.Groseau - Ultimate surgical solution - artisanal centromedulary nail coated with cement antibiotic in diaphyseal septic non-union of tibia and femur

Introduction

Artisanal coated intramedullary standard nails with a layer of antibiotic cement were used in osteosynthesis of the long bones of the lower limbs (tibia and femur) that had septic non-unions: case report series. Obtaining alignment was easy and reaming also improved consolidation and healing.

Methods

We examined 10 cases with tibial and femoral septic non-union (3 tibias and 7 femurs) operated between 2011-2017. Four cases had severe malalignment (10 degrees-30 degrees). The germs were Staphylococcus Aureus in 9 cases and Mycobacilum Tuberculosis drug resistant in one case. After debridement and reaming of the bone in excess by 4 mm thicker than the desired nail diameter, we performed the synthesis with cemented nails. We manually coated the intramedullary standard nails with a layer of antibiotic cement, inserting a nail into a cement prefilled sterile tube. In the cement, in 7 cases we added Vancomycin 2 g / dose and in 3 cases we used standard Erythromycin and Gentamicin cement. In sterile polyethylene tubes 4 mm in diameter larger than the nail used, we injected mixed cement and then inserted the nail while the cement was still drying. Sterile saline solution was used for cooling, and then the tubes were cut. In 8 cases we were able to block the cemented crafted nail.

Results

Healing of the nonunion was achieved in all cases and restoration of alignment was obtained in 9 cases. The shortening was required in 4 cases with an average of 1.5 cm, but in one case the elongation with the equalization of lower limbs was obtained. In 4 cases we have added hydroxyl apatite locally preloaded with Tobramycin. Clinical and laboratory criteria confirmed the absence of sepsis. We were confident to extract the implant in only 4 cases. There was no need for a review.

Conclusions

Good results have been obtained with this cement-antibiotic coated crafted nails in septic diaphyseal non-union of the tibia and femur. The one-step surgery managed to solve the non-union, septic, and malalignment. Our experience is limited, but in the future, it could be a valuable method.

Jeeshan Faridi, David Seligson - Technique for the use of tobramycin/rifampin coated nails in the treatment of infected non-unions of tibia shaft fractures

Introduction

Intramedullary long bone infections continue to be difficult to manage. Antibiotic coated nails have been well described and are very useful in treatment. Aminoglycosides, such as tobramycin or gentamicin, have most often been used. With increasingly resistant microorganisms, other antibiotics may be required. Rifampin is highly effective for the treatment of biofilm forming bacteria. We present the technique of creating a tobramycin/rifampin coated nail and provide some case examples.

Materials and Methods

Tobramycin powder (1.2 g) is combined with rifampin powder (300 mg) and one pack of Simplex cement powder (Stryker Orthopedics). The powders are mixed dry prior to initiating polymerization. The addition of monomer turns the mix to a dark brown. The mixture is placed into a cement gun and mixed before being injected into a 40 Fr chest tube which has been cut to the appropriate length. A 9 mm diameter titanium nail is passed through the antibiotic cement in the chest tube until the proximal and distal locking holes are uncovered and cleared of cement. The cement is allowed to harden (15-20 min) and the chest tube is peeled off.

Results

The tobramycin/rifampin coated nail is efficiently and reliably fabricated within 30-35 minutes and is ready for use. The creation of the nail may be performed at the same time as a co-surgeon is removing the prior implants from the tibia. Clinical photographs and radiographs of case examples will be included.

Conclusion

We conclude that the tobramycin/rifampin coated nail may be a useful choice for treating recalcitrant infected non-unions of the tibia.

Bahattin Kemah - Fibular Autograft Use Additional To Intramedullary Nail In The Treatment Of Tibia

Introduction

Dealing with tibia pseudoarthrosis is a great challenge especially in patients with bone defects. In the literature, plate osteosynthesis additional to bone grafts, tibialisation of the fibula, vascularized fibular autograft usage and Ilizarov use for acute shortening and segment sliding treatments have been identified for alternative treatment.

Materials-Methods

The patients who was operated on because of tibia nonunion with bone defects were recruited for this retrospective study. Inclusion criteria are: nonunions more than six months, nonunions because of previous tibia fracture, nonunions with bone defects more than 5 cm, 2 years of minimal follow-up time. Nonunions were determined according to direct radiographs and also clinically. 14 patients who met the criteria were included in the study. 8 patients were with infection and other 6 were free of infection. In surgical procedure; after debriment of necrotic tissues; tibia nail placed intramedullary and then nonvascularized fibula which has been harvested from ipsi/contralateral side, is divided into two parts and cortical sticks are introduced into the medulla right next to / very closely to the nail.

Results

The patients were followed up for 3 years respectively. All of the nonunions were healed without any problem. The average union duration was 18 weeks.

Conclusion

Fibular autograft additional to intramedullary nail is reliable and safe procedure in the treatment of tibial nonunions. Three-dimensional locking of the intramedullary nail used and mobilizing the patients by full and early load are important in nonunion treatment.

Acad. Nicolae Gorun, dr. Radu Popa, dr. Alexandru Grecu - History of Endomedulary Nails in Romania

Philipp Herlyn - Comparison of three tibial plateau fracture classification systems

In proximal tibial fractures choosing the correct approach for anatomical reduction and osteosynthesis depends on preoperative planning and thus on the correct classification of the fracture using the available radiographic material.

Internationally the X-ray-based classifications of the AO and Schatzker are commonly used. Recently a new classification was introduced by Luo et al. It is CT-derived and postulates a three-column model of the tibial head taking into account the often overlooked and underestimated dorsal fragment.

The aim of this study was to compare the classification systems mentioned above in our own patients in respect to frequency of their respective subtypes and their outcome. Patients were included that were treated at the Department of Trauma-, Hand- and Reconstructive Surgery of the University Medicine of Rostock with a tibial plateau fracture between 2012 and 2016. Retrospectively fractures were analysed according to the AO, Schatzker and the Luo classification. In order to provide additional information about the outcome patients were evaluated with the Knee Injury and Osteoarthritis Outcome Score (KOOS) questionnaire and tested for functional parameters using an app-based three dimensional motion sensor (Orthelligent Knee®, OPED). 138 Patients were eligible for the study and included in the fracture classification analysis, out of these 89 answered the KOOS questionnaire and 59 participated in the functional tests.

Paul-Dan Sirbu, Răzvan Tudor, Andrei Scripcaru, Norin Forna, Vlad Veringa, Popescu CD - The Advantages of Bioresorbable INION® Implants in Traumatology Design, polymer composition and preliminary results

Introduction

Some disadvantages of traditional metallic implants used in orthopedics and traumatology prompted the development of bioresorbable polymer devices. The aim of this study is to emphasize the characteristics of INION® resorbable implants (regarding design and polymers compositions), as well as to evaluate the results when using these innovative implants in 5 trauma cases.

Materials and methods

The polymers used in manufacturing INION® devices (Trimethylene Carbonate/TMC; L-Polylactic acid/LPLA; D,L Polylactic acid/ DLPLA; Polyglycolic acid/PGA) degrade in alpha-hydroxy acids, gradually losing their hardness in 18-36 weeks with a complete bioresorption of 2-4 years. We have used this implants for 1 distal radius fracture, 2 radial head fractures, 1 maleolar fracture and 1 distal humeral fracture.

Results

The clinical cases demonstrated the advantages of INION® plates (adapted shape, low profile, polyaxial screws, acceptable strength) or pins (allowing the alignment and fixation of fracture, no migration). Among our patients, we found excellent results concerning the maintaining of primary reduced fracture, active range of motion, minimal pain with improving everyday comfort, no tissue or implant complications.

Conclusions

Bioresorbable fracture fixation INION® devices are a viable alternative to traditional metallic implants, offering same significant advantages over them: the avoidance of long-term interference with gliding structures, keeping their strength long enough to support bone healing, no need to remove the implants, less pain, radiolucency, elimination of stress shielding and a lower risk of complications.

Rodolfo Zamora, Jeeshan Faridi, Rashad Usmani - Outcomes with Minimum 1 year Follow Up of Intraarticular Distal Femur Fractures treated with Closed Intramedullary Nailing combined with Percutaneous and Blocking Screws

Introduction

Retrograde intramedullary nailing is a well accepted method of treatment for distal femur fractures. However, distal femur fractures with significant comminution and/or with multiple articular fragments are usually treated with plate fixation. We hypothesize that these fractures may also be treated successfully with retrograde nailing combined with percutaneous fixation of articular fragments and blocking screws to prevent a windshield wiper effect of the nail.

Methods

A retrospective review of 20 cases performed by a single surgeon was performed. Twenty distal femur fractures in twenty patients were nailed in a closed manner after intercondylar extension of the fracture was treated with percutaneous screws. Blocking screws were placed in either the sagittal or coronal plane adjacent to the nail to limit movement of the nail. Limited range of motion was begun early. All cases had minimum 12 month follow up and radiographs available for review.

Results

Nineteen of twenty femurs went on to complete union by the time of their 12 month follow up visit. There were no instances of infection, malunion, or non-union. All nineteen patients were full weight bearing. Two of the nineteen complained of irritation and required percutaneous screw removal. One patient suffered a subsequent fall early in rehab and was revised to a distal femur replacement.

Conclusion

We conclude that retrograde, interlocking intramedullary nailing is an excellent technique for treating distal femur fractures with both comminution and/or intercondylar extension when combined with percutaneous screws for reduction of the joint surface and blocking screws to prevent motion of the nail.

Wilhelm Friedl - The Gliding Nail (GN) as universal Implant for proximal Femour Fractures Osteosynthesis

Clinical problem: the cut out is one of the major and most severe complications in the management of trochanteric and subtrochanteric fractures in elderly patients due to osteoporosis. In experimental examinations we found a significant decrease of the cut through and out of the I beam profile femur neck component of the GN as compared to nails with a single or double screw neck component fixation. The clinical results of the GN Osteosynthesis in trochanteric and femour neck fractures as compared to standard osteosynthesis are presented. One hypothesis of these studies is that the instability of fracture fixation with allows micro movements is a important factor in the high failure rate of medial femur neck fractures independent from osteoporosis, disturbed blood supply and high biomechanical load.

Material and methods: in a five year period 03.1996-03.2001 501 consecutive patients with **trochanteric and subtrochanteric fractures** were evaluated. Re-examination was performed at least 6 months after therapy. All patients with no additional injury of the same leg were allowed full weight bearing immediately (98%). 70% were female, mean age 76,2 years, median 80 years. 82% had risk factors, 11.2% were in a nursing home. 95% were treated in the first 36 hours by 23 surgeons.

In a second study : from 1982-1992 85 patients with **medial femur neck fractures** were treated with 3 to 4 screw fixation and 46 with a 130° plate from whom 65 could be re-examined retrospectively up to 10 years after operation. In a second group 134 patients treated from 1999 to 2004 with the Gliding nail (GN) which is a intramedullary implant with a gliding femur neck component with a rotation stable I beam profile plate which is impacted and not inserted after bone removal as in screw systems (local bone graft effect). This, the big surface and rotation stability minimise the cut out risk compared to screw systems. All patients were re-examined in 2005. 43% were dislocated fractures. The patients were prospectively recorded and re-evaluated 2005.

Results: early local complications in trochanteric fractures occurred in 2,5%. Hospital mortality was 3,9%. Whereas the mortality in patients without risk factors the mortality was 2,4% when 4 risk factors were present mortality was 90%. Osteoporosis and Diabetes had no influence as risk factor. Late local complications were 3,3%. in 1,9% blade dislocation but in no case cut out was observed. In all cases joint preserving re-osteosynthesis was possible. Central impaction of the blade was minimal with 0,24mm, varus displacement 0,7 degree, the mean fracture impaction was only 2,2 mm due to the rotation stability of the blade so that the neck could not rotate to dorsal located bone defect. The 3 months mortality was 14,9%.

In the femour neck fracture study the local postoperative complication rate was 6% for the screw fixation and 8,7% for the 130° plate. The late complication rate was much higher with 40%. In the screw group 32,5% and in the 130° plate 52%. Pseudarthrosis with 10,8%, cutout and implant dislocation were observed in 13,9% and head necrosis and arthritis occurred in 15,4%. There were no complications in the 9 Pauwels I (Garden I and II) but 61% in type II (Garden III) and 36% in type III (Garden IV) fractures. In 34 % a hip prosthesis was implanted after complications occurred.

In the GN treated patients only one pseudarthrosis (0,7%) and in 8,2% head necrosis occurred. In total 10,4% secondary prosthesis had to be implanted. Surprisingly there was nearly no difference between the rate of failure and secondary hip replacement in Pauwels I to III fractures. 2 wound revisions or exchange of the blade because of tractus irritation were performed. After the change of the blade base design parallel to the nail tractus irritation did not occur anymore.

Conclusion: the results show that the event of a trochanteric fracture is still a serious risk but local complications especially cut out of the implant and severe impaction of the fracture can be avoided by using the GN.

The rate of complications after medial femur neck fractures is only in part dependent from the disruption of blood circulation. The minimised cut out risk and rotation stability of the GN allows a relevant reduction of the local complication rate and secondary prosthesis implantation rate. Cut out and pseudarthrosis are reduced dramatically.

Anica Herlyn, Eva Bernt, Attila Vászárhelyi, Philipp Herlyn, Thomas Mittlmeier, Georg Gradl - Tibiotalocalcaneal arthrodesis using a posterolateral approach and Talarlock®-/Pantalarlock® polyaxial locking plate system

Introduction

Frequently observed complications for tibiotalocalcaneal (TTC) arthrodesis are 18% wound healing disorders and up to 35% nonunion rate. In order to lower these specific shortcomings a new polyaxial locking plate system with an implant associated compression mechanism applied via a posterolateral approach was evaluated concerning complication rates, nonunion rates, function and quality of life. Methods: This multicenter study evaluated 48 patients (mean age 65 years) for 44 weeks after surgery for posttraumatic arthrosis (35%), fresh ankle fractures (17%), primary arthrosis or rheumatoid arthrosis (13% each) in 7 centers. Radiological and clinical functional analysis included the analysis of union and axes as well as the AOFAS score.

Results

Mean time for surgery was 138 minutes (80 – 220) followed by 9.7 days (6-20) inpatient treatment time. Functional AOFAS results were good with 86% of patients able to walk 200 meters pain free. VAS score for patients with TTC arthrodesis was 0.2 in mean, for patients with tibiotalar arthrodesis 3.5. Complete radiological union was found in 96% of cases. Revision surgery was necessary in 15% due to wound infections (deep 6%, superficial 2%), consecutive instability (4%) and non union (2%).

Conclusion

The polyaxial locking plate system represents a reliable and safe fixation technique for TTC arthrodesis for severe arthrosis and fractures and appropriate indications with primary or secondary malposition or instabilities.

Mirosław Falis - The osteoporotic bone fracture treatment - open questions from daily practice

Adam Miller, David Seligson, Justin Givens, Brandi Hartley - Buzzing The Tower

The incidence of patients with total knees, osteoporosis, and tibia shaft fractures is increasing. The best treatment for a tibia shaft fracture is the medullary nailing of Küntscher nails, 9, 10, or 11 mm in diameter fit in the tibia just anterior and distal to the tibial tray of a knee replacement. Five cases of tibia shaft fractures were successfully managed with antegrade nails (buzzing the tower.) Hindfoot nails are an alternative to plating and external fixation when the skin is bad or compliance would be difficult.

Rodolfo Zamora, Jeeshan Faridi - Biomechanical Stability and Strength of Single versus Double Locked Plating of Distal Humerus Fractures in Osteoporotic Bone

Purpose

There is a high incidence of extra-articular distal humerus fractures from simple falls in osteoporotic bone. Two plates are often used for these fractures, which requires dissection and significant exposure. With the development of locked plating, fracture stability in osteoporotic bone has been significantly improved. In low demand older patients, we hypothesized that the use of a single, posterolateral locked plate could achieve adequate fixation of extra-articular supracondylar fractures in an osteoporotic bone model.

Methods

Eleven osteoporotic bone surrogates were used. Specimens were tested in an MTS load frame, where the distal humeri were loaded in flexion, extension, and torsion. The stiffness of each construct was calculated from load-displacement curves. Specimens were then loaded to failure in the simulated flexion condition as a measure of worst case failure strength. Data was compared using ANOVA followed by post-hoc t-tests.

Results

Construct	Stiffness			Strength (N)
	Extension (N/mm)	Flexion (N/mm)	Torsion (N•m/deg)	
90-90	145.9± 21.2	34.2 ± 4.8	0.55 ± 0.07	244.0 ± 49.3
PL	97.2 ± 12.0	16.5 ± 2.8	0.32 ± 0.05	146.8 ± 13.2
M	56.0 ± 18.3	13.3 ± 1.7	0.31 ± 0.04	143.4 ± 16.4

The 90-90 plates were stiffer than the PL or M plate in all three loading modes (p<0.05), while the PL was stiffer than the M for extension and flexion (p<0.05). Since the maximum force expected on the distal humerus during flexion is approximately 10 N, less than 1.0 mm of fracture site displacement would be expected under any of these conditions.

Conclusion

Although 90-90 plating was more stable, a single PL locked plate demonstrated stiffness and strength sufficient to control the loads expected on the distal humerus in the early “non-load-bearing” stage of fracture healing in an osteoporotic bone model.

Wilhelm Friedl - Treatment of Ankle Fractures with the locked intramedullary straight XS Nail in complex fractures, osteoporotic bone and soft tissue damage

In unstable fractures many authors demonstrated a better outcome after surgical management. Plate osteosynthesis is the standard procedure today. However soft tissue problems due to trauma, arterial or venous problems and diabetes Arterial soft tissue problems can cause severe problems. The screw fixation in osteoporotic bone and in comminuted fractures can be insufficient. After ankle osteosynthesis Zaghoul reported in over 60 year old patients a rate of infection of 2% but 21,5% of the patients had complications and 10.8% where major requiring operative revisions. The XS nail a straight 4,5mm intramedullary implant witch can be locked every 9mm with threaded wires showed significant lower deformation and higher bearing capacity as plate osteosynthesis in experimental tests.

Material and Methods

From december 1999 to march 2001 214 patients with a ankle fracture were treated consecutively with a XS nail in all ankle fractures except patients having a medullar canal too thin for nail insertion. All patient data pre, intra and postoperative datas where recorded prospectively and clinical and radiological re-examination 6-18 months after operation was performed and evaluated according to the olerud score. A long time follow up was also performed.

Results /Olerud score

Exzellent	71,4 %
Good	24,3 %
Satisfactory	1,2 %
Bad	2,2 %

(bad results in 4 patients with regional pain syndrom, Parkinson, reosteosynthesis after plate, complete joint dislocation)

Conclusiones The XS nail allows a stable fixation also in comminuted and osteoporotic fractures with a low complication rate

David Seligson, Lonnie Douglas - Shifting Osteotomy for Malunions

Worldwide, small wire circular external fixateurs are a usual treatment for long bone malunion. None the less this method presents inconveniences particularly in unruly accident patients. Küntscher's shifting osteotomies are a good alternative. The medullary canal is aligned and the osteotomy stabilized with an intramedullary nail. With short segments, hindfoot nailing can give enough stability to promote union. Representative cases are shown.

Mirosław Falis - Mini invasive subtalar arthrodesis using Calcanail as salvage procedure - cases reviews

Miroslav Falis - Mini invasive calcaneal fracture treatment using Calcanail method- whole new perspective using Calcanail method

David Easley - Medication Assisted Opioid Use Disorder Treatment

Opioid use disorder is an imminent public health problem. Opioid naive patients often are treated for pain after skeletal trauma; it is questionable if patients can recover from the effects of opioids after even a few days of opioid administration. Buprenorphine is now available in oral and depo preparations, Buprenorphine occupies the opioid receptors and provides relief from the cravings and the drug seeking behavior seen with chronic opioid use syndromes. Patients are able to return to their usual activities and remain in productive activity while taking Buprenorphine. How and if the medication can be discontinued is problematic.

Notes

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