

SNAC (scaphoid non-union advanced collapse): algorithm of treatment

M. Rampoldi¹, D. Tagliente²

¹Ospedale CTO (Rome, IT);

²Università Roma II Policlinico Tor Vergata (Rome, IT)

Introduction The natural history of untreated or not healed scaphoid nonunion is a progression to secondary radiocarpal osteoarthritis and carpal collapse (SNAC wrist). Many types of surgical treatment are described, however the treatment of this pathology continues to be problematic.

Materials and methods Based on an experience of 38 cases, we suggest an algorithm of treatment according to stage of pathology. Nineteen patients (18 males, 1 female, mean age 43 years) with prevalent radio-scaphoid (stage I) and scapho-capitate arthritis (stage II) were treated with partial scaphoidectomy and implant of a pyrocarbon ovoid (APSI). Patients with advanced collapse and lunocapitate arthritis underwent scaphoidectomy and intercarpal arthrodesis (17 male, mean age 48 years) or first row carpectomy (2 female, mean age 72 years). In all cases radial styloidectomy was performed. Patients were evaluated radiologically and clinically (VAS and DASH score, ROM and grip strength) at a mean follow-up of 35 months.

Results Better results (mean VAS score 0.8, mean DASH 9, mean ROM 75 % of the opposite wrist and grip strength 86 %) were obtained in patients with pyrocarbon implant. One case showed an implant instability with dorsal subluxation. DISI deformity was present in some cases but didn't show a progression in the follow-up. Patients who underwent intercarpal arthrodesis showed a limited ROM (40 % compared to the opposite site), an average DASH score of 18 and a VAS score of 1.6. All arthrodesis appeared healed. One case, due to persistent pain, underwent radiocarpal fusion. 2 elderly patients had a proximal row carpectomy with acceptable functional results and relief of pain.

Conclusions According to these data a treatment algorithm is proposed based on the stage of pathology, age and functional request. In stage I and II implant of APSI lead most cases to complete functional recovery and must be considered the first choice of treatment. In more advanced stage proximal row carpectomy is considered only in elderly patients while intercarpal arthrodesis are performed in younger and active people. No differences in results were noted between partial or 4 corner arthrodesis.

ORAL COMMUNICATIONS

C40-INFECTIONS

Total knee arthroplasty infections by resistant bacteria

M. Vasso*¹, A. Schiavone Panni¹, G. Gasparini², S. Cerciello¹, C. Fabbriani³

¹Università del Molise (Campobasso, IT);

²Università Magna Graecia (Catanzaro, IT);

³Università Cattolica del Sacro Cuore (Rome, IT)

Introduction The increasing number of total knee arthroplasties that are every year performed in all over the world, has resulted in a concomitant rise in bacterial infections. Controversy remains about the best management of the knee peri-prosthetic infections by resistant organisms. The purpose of this study was to determine if a two-stage reimplantation protocol was effective in eradicating infection and restoring a functioning prosthesis, and to report the percentage of patients who finally maintain an arthroplasty when resistant organisms are involved at the site of an infected total knee arthroplasty.

Materials and methods Twenty-nine total knee arthroplasties infected by resistant bacteria were consecutively managed at the orthopaedic department of Catholic University (Rome, Italy). The patients included 21 females and 8 males with a median age of 72 (54–89) years. All patients were managed through a two-stage reimplantation strategy. Between the stages, intravenous antibiotics were administered for a median period of 8 (6–12) weeks. Median follow-up was 8 (5–11) years. **Results** Two-stage reimplantation strategy resulted successful in 24 (83 %) patients to eradicate infection. Infection recurrence with the same organism occurred in 5 (17 %) patients. All these 5 patients did not finally keep a knee prosthesis.

Discussion Two-stage reimplantation certainly remains the best surgical solution for the management of the peri-prosthetic knee infections, with reported success rates almost constantly higher than 90 % in eradication of infection and preserving a functional prosthesis. However, these data have not been stratified on the aetiology of the infecting organism. When resistant bacteria are involved, overall outcomes certainly appear less reliable, with possible higher reinfection rates and final implant loss.

Conclusions The reinfection rate reported in the present study was quite similar to those in reports on two-stage reimplantation without organism stratification; therefore, two-stage protocol remains a viable option for patients with peri-prosthetic knee infections by resistant organisms. However, reinfections by resistant bacteria could be more frequent and to present severe complications, with higher rate of final prosthesis (and limb) loss.

Hyperbaric oxygen therapy in the prevention of complications of open fractures (nonunions, osteomyelitis)

R.A. La China*¹, V. Triolo¹, G. D'Amico², A. Triolo³, A. D'Arienzo¹, M. D'Arienzo¹

¹U.O. Ortopedia e Traumatologia, Policlinico (Palermo, IT);

²Dipartimento di Anestesia e Rianimazione, Policlinico (Palermo, IT);

³U.O. Chirurgia Plastica Ricostruttiva ed Estetica, Policlinico (Palermo, IT)

Introduction In recent years there has been an increased incidence of open fractures due to the risk of high-energy trauma. The open

fractures with any mortification of the soft tissue hesitate in 30–50 % of cases in nonunions and osteomyelitis. Numerous studies in literature have demonstrated the important role that hyperbaric oxygen therapy plays in supporting proper healing of bone and soft tissue as it has a positive effect on the neovascularization, on the reproduction of bone and antibacterial activity.

Materials and methods From January 2011 to December 2012 at our U.O. 16 cases of patients with open fractures of the lower limb were treated, including 4 cases associated with a large exposure with loss of substance of the soft tissue (Gustilo 3). All patients were treated in urgency by stabilization of the fracture, surgical debridement, OTI and already at the first post-operative day, they underwent broad-spectrum antibiotic therapy.

Results The 16 treated patients were subjected to clinical, radiographic examinations and serum-blood investigations up to 6 months. In 13 patients clinical and radiographic cure and the normalization of inflammatory markers were achieved. Only in one patient with trauma due to the crushing of a foot, after 15 sessions of OTI, we resorted to amputation of the first toe. The intervention of coverage of the loss of substance with vascularized free strip was necessary for two out of four patients with fracture associated with a serious loss of soft tissue.

Discussion This therapeutic protocol has allowed reduction of immediate post-operative complications in 96 % of cases, as well as promotion of good consolidation of the fracture in patients monitored for at least 6 months.

Conclusions The association OTI, broad-spectrum antibiotic therapy and surgery was successful in reducing the incidence of osteomyelitis and nonunion, ensuring a good revascularization and soft tissue healing, and also reducing the healing time of the fractures.

Decennial clinical records of Codivilla-Putti Institute about the treatment of infected nonunions using Ilizarov's method

F. Centofanti¹, L. Fisichella*², R. Orani¹, P. Ditto², M. Maio², M.A. Rosa²

¹Istituto "Codivilla Putti" GIOMI SpA (Cortina d'Ampezzo, IT);

²Scuola di Specializzazione in Ortopedia e Traumatologia, Dipartimento di Scienze Biomediche e delle Immagini Morfologiche e Funzionali, Sezione di Ortopedia e Traumatologia, Università degli Studi di Messina (Messina, IT)

Introduction The increasing number of traumas and of the resulting surgical treatments in the orthopaedic field has characterized the growth of complications due to the surgical act itself, as the pseudoarthrosis and infections. The result of the connection among multiple complications makes the problem worse to solve, since the orthopaedist should solve the entire problem. Authors mean to show the decennial clinical records concerning the treatment of infected pseudoarthrosis, due to the failure of internal stabilization, using Ilizarov's method, founded on the stimulus of the revascularization of the infected site by corticotomy (osteomyelitis burns in the flame of the regenerate).

Materials and methods In this research 2 types of internal stabilization have been examined: plate and screws fixation and intramedullary nail fixation. Number of treated patients: 390; 286 with tibial location (54 intramedullary nail, 232 plates and screws), 104 with femur location (42 intramedullary nail, 62 plates and screws). In all of them it has been utilized the method of bone transport with Ilizarov's apparatus, which has been enhanced through adapted antibiotic therapies and specific diagnostic test, however linked to an adapted debridement of the infection's site. The transport has been monofocal in 286 cases and bifocal in 104.

Discussion After the decennial experience of the Putti Institute of Cortina d'Ampezzo, authors consider Ilizarov's method still actual in infected pseudoarthrosis with bone loss treatments. In fact, thanks to a better stabilization and a multiplanar control, the Ilizarov's method allows the simultaneous management of different problems.

Conclusions This method should be addressed to the selected cases because it requires serial controls, a good compliance of the patient and longer times compared with other treatments. The Ilizarov's method allows to be drastic but not wreckers.

A new approach to antibiotic prophylaxis in prosthetic joint surgery

M.C. Ferrari*, F. Astore, F. Della Rocca, F. Traverso, D. Ricci, M. Scardino, G. Grappiolo

Istituto Clinico Humanitas (Rozzano, IT)

Introduction Prosthetic joint infections are rare but devastating complications. Antibiotic prophylaxis is mandatory because of its efficacy to prevent such condition. Many different protocols are published in literature using first- or second-class cephalosporin or vancomycin/clindamycin in beta-lactamic allergic patients as well as in high methicillin-resistant *Staphylococcus aureus* incidence hospitals. The importance of short duration and proper timing of prophylaxis is well demonstrated.

Materials and methods From January 2011 continuous intravenous antibiotic prophylaxis was introduced starting in the operating theatre for a duration of 24 h using cefazolin or vancomycin. Infection data from 2009 to 2011 was evaluated with a follow-up ranging between 12 and 24 months.

Results In 2009 there was a 0.68 % of incidence of new cases (8 out 1,180 patients); in 2010 there was an increase to 1.19 % (16 out 1,350 patients); in 2011, with the new prophylaxis, the infections rate was 0.39 % (6 out of 1,545 surgeries) ($p = 0.012$).

Discussion In primary and revision total hip and knee arthroplasty, the duration of the procedure is often unpredictable. Therefore, we decided to use continuous 24 h using cefazolin or vancomycin intravenous antibiotic prophylaxis demonstrating a significant decrease in infections.

Conclusions The current prophylaxis for primary and revision total hip and knee arthroplasty should be considered.

The sonication in microbiological diagnosis of prosthetic infections

F.R. Evola*¹, L. Costarella¹, V. Pavone¹, D. Bongiorno², L. Sessa², S. Stefani², S. Avondo¹, G. Sessa¹

¹Clinica Ortopedica dell'Università di Catania (Catania, IT);

²Dipartimento di Scienze Microbiologiche, Università degli Studi di Catania (Catania, IT)

Introduction Prosthetic infections are one of the most serious and devastating complications in orthopaedics. The identification of the microorganism remains, therefore, an essential requirement in order to be able to undertake the most appropriate therapy. Recently, a role is given to the use of the sonicator; this instrument can break the biofilm prosthetic through the use of ultrasound at low energy (40–60 kHz for 5–30 min). This technique frees the microorganisms from the polysaccharide matrix, thus making them more easily cultivated. The purpose of this work is to evaluate the effectiveness of this method in the treatment of prosthetic infections.

Materials and methods We performed a prospective clinical study of 25 revisions of hip and knee arthroplasty infected with the objective