



International Abstracts

Experimental study of fibrin glue adhesion with epineurial anchor suture to repair peripheral nerves

Zhang C, Yudong Gu, Chen L. *J Reparat Reconstr Surg* 1998; 12: 129-132.

To improve the technique of fibrin glue adhesion repair of peripheral nerve, 20 male rats were used. All the rats were randomly divided into two groups: Suture group (n=10) and glue adhesion group (n=0). The left sciatic nerves of the rats were cut with knife and repaired by suture or adhesion methods separately according to their groups. When adhesive method was used, the epineurium was fixed with a suture method similar to the anchor suture method for preventing suture line tearing. Immediately after the repair and 8 weeks after the surgery, the histologic and electrophysiologic changes of the repaired nerve were observed. The result showed that the axonal cooptation was soon improved in the glue adhesion group was more regular than that of the suture group. Moreover, there were great improvements of axon cross rate and recovery rate of sectional area of nerve fibre at the distal end in glue adhesion group ($P < 0.05$, $P < 0.01$). It was concluded that glue adhesion was better than suture in repair of peripheral nerve and the anchor suture could improve the technique of glue adhesion method.

Khoo Boo-Chai

Corresponding Author: Dr Gu Yudong, Department of Plastic Surgery, Changzheng Hospital, Shanghai 200003, P R China.

The inhibitory effect in vitro of Saliva miltorrhiza and tetramethyl pyrazine on the growth of fibroblasts

Shang Q Zhang D, Guan W. *Chinese J Repart and Reconstr Surg* 1998; 12: 321-324.

To investigate the inhibitory effect of saliva miltorrhiza (SM) and tetramethyl pyrazine (TP) on fibroblasts, the fibroblast from the hypertrophic scar tissue of chest was chosen for culture of fibroblasts and the influence of SM and TP on fibroblasts was observed. The effects of the drugs on the growth of fibroblasts, on DNA synthesis of fibroblasts and on mitosis index of fibroblasts were all determined quantitatively. The results showed: The (1) SM and TP could inhibit significantly the growth of the fibroblasts, the inhibitory effect was irreversible when the concentration of the drugs reached 5ug/ml and 500ug/ml respectively, (2) SM and TP could inhibit the absorption of $^3\text{H-TdR}$ and this effect was correlated positively to the dosage of the drugs and (3) SM and TP could reduce the mitosis index of fibroblasts. It was concluded that SM and TP has definite depressive effect on growth of fibroblasts, which was correlated positively with the concentration of drugs and duration of application. The inhibitory effect of the drugs on fibroblasts was mainly through inhibition of synthesis of DNA.

Khoo Boo-Chai

Correspondent Author: Dr Shang Di-Shenoy MD, Department of Plastic Surgery, S'hai 9th People's Hospital, S'hai 2nd Med University, Shanghai 20011, P R China.

Determination of intracellular calcium ions in fibroblasts of contracted scar

Wang Wenge, Qian Y, Cui l. *Chinese J Reparat and Reconstr Surg* 1998; 12: 329-31.

Free calcium ions, as a kind of message-transport substance, is important in cellular activity such as cell movement, cell differentiation and cell proliferation. To investigate the relationship between free calcium ions and scar contracture the fibroblasts, which originated from hypertrophic scar, keloid and normal skin were used as the experimental target. The fibroblasts from 4th and 6th generations of different sources were used. Then the fluorescent Ca²⁺indicator Fura-2/AM and Image analysis system, measured the intracellular free calcium ions concentrations respectively. The result showed that the level of Ca²⁺ in fibroblasts of hypertrophic scar was higher than that in keloid and normal skin (P<0.01). There was no significant difference between the levels of Ca²⁺ in keloid in normal skin. The conclusion was that the concentration of intracellular free calcium ions played an important role in the scar contracture, but the exact mechanism was still unclear and required further study.

Khoo Boo-Chai

Corresponding Author: Dr Wang-ge, Department of Plastic Surgery, 9th People's Hospital, S'hai Med university, Shanghai 200011. PR China.

The influence of saliva miltorrhiza and tetramethyl pyrazine on DNA content of cicatricial Fibroblasts and its cellular cycle

Zhang Q Zhang D, Guan W. Chinese J Reparation and reconstr Surg 1998; 12:325-328.

To study the mechanism of the inhibitory effect of saliva miltorrhiza (SM) and Tetramethyl pyrazine (TP) on scar fibroblasts, the DNA content of fibroblast and the all distribution of cellular cycle was measured by FCM. The hypertrophic scar tissue of chest was chosen for primary culture of fibroblast. Then this cultured cell was reacted with SM and TP. FCM was used to measure the DNA index and duration of cellular cycle. The results showed that: 1) SM and TP had little effect on DNA index, but when the concentration of drugs reached the threshold, they could increase the fibroblasts in C₂-M stage and the duration of C₂-M stage was prolonged; (2) TP could also prolong the duration of S-stage; (3) SM and TP could also prolong the multiplication time of fibroblasts and this effect was correlated positively with dosage of drug.

The conclusions were that the inhibitory effect of SM was the result of inhibiting the mitosis of cells and the cellular cycle be at a standstill in C₂-M stage. The inhibitory of synthesis and duplication of DNA and cellular mitosis and the cellular mitosis and the cellular cycle was also at a standstill in C₂-M stage.

Khoo Boo-Chai

Corresponding Author: Dr. Zhang DI-Sheng, Department of Plastic Surgery S'hai 9th People's Hospital, S'hai and 2nd Med University Shanghai 20001, P R China.

Observation of cicatricial fibrblasts in culture and its biological properties

Huang Y, Ren L, Qin Y. Chinese J Reparation and reconstr Surg 1998; 12; 332-335.

To study the biological properties of fibroblasts isolated from different tissues. The fibroblasts from normal skin, hypertrophic scar and keloid were cultured respectively, in vitro and their morphologies and growth kinetics were compared. The results revealed and although fibroblasts in keloid were irregularly arranged, with loss of polarization, there was no significant difference in 3 groups so far as the cellular morphology of fibroblast itself, cellular growth curve, cellular mitotic index, cloning efficiency and DNA content provided those cultures were in the same cellular density and culture conditions. It was concluded that fibroblasts isolated from culture of normal skin, hypertrophic scar and keloid in vitro showed no significant difference in morphology and growth kinetics. On the contrary, their biological behaviours were quite similar.

Khoo Boo-Chai

Corresponding Author: Dr Huang Yong MD, Department of Plastic Surgery. First University Hospital, West China Medical Sciences, Chengdu 610041, PR China.

Clinical application of the reversed digital artery island flap containing palmar digital vein

Wang T, Yudong Gu. Chinese J Reparation and Reconstr Surg 1998; 12:342-344.

A novel reversed digital artery island flap, was used in 13 cases involving 17 digital skin defects

since 1993. The digital skin defects were covered by a reversed digital artery island flap, a comparative study was made between the flap with or without a palmar digital vein. The results showed that the 17 island flaps all survived and during the early stage after operation, the incidence of venous crisis in the flaps without palmar digital vein was 87.5% (7/8) while that in the flaps with the vein was only 11.1% (1/9). It was concluded that the reversed digital artery island flap containing a palmar digital vein could obviously reduce the incidence of venous crisis and improve the survival of the flap.

Khoo Boo-Chai

Corresponding Author: Dr Gu Yudong MD. Department of Hand Surgery, Huashan Hospital, Shanghai Medical University, Shanghai 200040, P R China.

Restoration of supination of forearm by flexor carpi radialis transfer

Yang Z, Huang F, Zhang S. Chinese J Reparation and Reconstr Surg 1998; 12:336-338.

The Dysfunction of supination of forearm following of brachial plexus injury or poliomyelitis always affects the function of the hand to find the dynamic muscle for restoration of supination, the flexor carpi radialis was investigated on fifty male cadavers. The blood supply of the muscle was polygenic, mainly derived from the humoral and radial arteries. The movement of the muscle was innervated by median nerve. If the proximal 1/3 belly of the muscle was not disturbed, the blood supply and innervation of the complete muscle was preserved. Based on the anatomic data, the operative procedure was designed as follows: transfer the distal 2/3 of flexor carpi radialis to the dorsal-radial side, the tendon was fixed on the radius shaft 6 to 10 cm proximal to the styloid process with forearm in full supination. Four patients were treated and after follow up for 3.2 years (average), the supination was restored. It discussed that in case of paralysis of the flexor carpi ulnaris and pronator teres, the optimal choice to restore the supination would be flexor carpi radialis.

Khoo Boo-Chai

Corresponding Author: Dr. Young zhiming MD, Department of Plastic Surgery, First University Hospital, West China University Medical Sciences, Chengdusichuan 610041, PR China.

Applied anatomy of the pedicled patella transposition for repair of the superior articular surface of the medial tibial condyle

Chen X, Chen Z, Whang B et al. Chinese J Reparation and Reconstr Surg 1998; 12: 153-155.

To investigate the feasibility of using the pedicled patella for repair of the superior articular surface of the medial tibial condyle, 37 lower limbs were studied by perfusion. In this series, there were 34 obsolete specimens and 3 fresh specimens of lower legs. Firstly, the vessels which supply to patella were observed by section and casting mould. Then, the form and area of the patellar and tibial medial condylar articular surfaces were measured in 30 cases. The results showed: (1) The arteries supplying to the patella formed a prepatellar arterial ring around the patella, (2) Medial inferior genicular artery and inferior patellar branches of the descending genicular arterial articular branch merge and accede to prepatellar ring at inferior medial part of the patella; (3) the articular surface of the patella is similar to the superior articular surface of the tibial medial condyle in shape and area. It was concluded that the pedicled patella could be transposed to medial tibial condyl to repair the defect of the superior articular surface. The function of the knee can be preserved by this method.

Khoo Boo-Chai

Corresponding Author: Dr Chen Xiu-qing, Department of Anatomy, Naval Medical College, Nanjing 210099, PR China.

Allograft of frozen nerve in repairing sensory nerve defect

Tian L, Zhan J, Wang S et al. Chinese J Reparation and Reconstr Surg 1998; 12:138-140.

To observe the effect of allogenic deep frozen nerve transplantation in repairing sensory nerve defect, 22 patients who had received this type of treatment were followed up for 0.5-5 years. There were 18 males and 4 females in this group

and the average age was 28 years old. Thirty-six nerve defects including the common volar digital nerve and proper volar digital nerve were repaired by allograft of nerves stored at -80C. The stored period ranged from 3 days to 1 year. The length of the nerves 2cm-12cm. After follow up for 3 years (ranged from 7 months - 5 years), 23 cases of nerve allgraft obtained excellent and good results (63.9%), 10 cases were fair (27.7%) and 3 cases were poor (8.3%). It was concluded that (1) frozen nerve is a suitable material for repairing the nerve defect (<5cm); (2) the immunity of allogenic nerve is weak; (3) the deep frozen storage can reduce the immunity of nerve; (4) the dimethyl sulfoxide can prevent the nerve tissue from injury by deep frozen; (5) the best temperature and period for deep frozen storatation should studied further.

Khoo Boo-Chai

Corresponding Author: Dr Tian Lijie, Depart Hand Surg, Affili Ctr Hospital affiliated counter Hospital of Shenyang Medical College, Shenyang 110024, PR China.

Repair of peripheral nerve by direct suture after elongation of nerve by traction

Wang S, Wang H, Chen J. Chinese J Repart and Recnstr Surg 1998; 12; 135-137.

To find new technique for repair of peripheral nerve defect nerve elongation repair technique was adopted. Two cases with nerve defect were treated by this method. One was a 12-year-old male and the defect length of the right radial nerve was 7.2cm at the elbow. The other one was a 28 old male, the defect length of left ulnar nerve was 5cm at elbow. In this method, the nerve was elongated by slow traction from distal and proximal end of the ruptured nerve. After a few days, the nerve was repaired by direct suture. After operation, the function of nerves recovered in 119 days and 114 days respectively, Follow-up 5 years, the function of the affected limbs were similar to the normal side. It was concluded that: (1) the peripheral nerve can be elongated by slow stretch: (2) Bystretching the nerve end in a rubber tube can prevent adhesion and connective tissue blocking; (3) strength and supporting point of stretching should be designed carefully.

Khoo Boo-Chai

Corresponding Author: Dr Wang Shu-Cheng MD, Hainan People's Hospital, Haikou 570311, PR China.

Hydroxyapatite cement: an alternative for craniofacial Skeletal contour refinements

Jackson IT, Yauwzer R. Br J Plast Surg 2000; 53;24-29.

It is not uncommon for craniofacial and Maxillofacial bone reconstructions to require further contouring. Bone excess is not a problem but the correction of bone irregularities and small deficiencies are challenging. bone grants are unpredictable and require a donor site. Alloplastic materials, apart from methylmethacrylate, till now had no place in such cases. Among these alloplastic materials the most promising and well tolerated are calcium phosphate based compounds. Hydroxyapatite cement is a calcium phosphate preparation composed of tetracalcium phosphate and dicalcium phosphate anhydrous powders. When mixed with water it isothermically forms a paste, which can easily be shaped intraoperatively. This mixture sets in aproximately 15-20 minutes and converts into water insoluble, nonceramic, microporous hydroxyapatite in 4 hours.

The biomaterial - Hydroxyapatite was used to correct either congenital or traumatic craniofacial contour irregularities or deficiencies in 20 patients. There were 8 men and 12 women with ages ranging from 6 to 73 years. Most of the patients had previous craniofacial surgery and required further contour refinements. The amount of Hydroxyapatite cement used varied from 10 grams to 60 grams, the frontal and temporal areas being the main sites recontoured. Patients were followed for 3 months to 12 months. Both patients and surgeons found the cosmetic results satisfactory. The good cosmetic results, the ease of operation, the pliability of the cement paste allowing precise moulding during application, the short operation time and the avoidance of donor site makes hydroxyapetite cement an attractive material for treating craniofacial countour defects. Careful long term follow up is necessary to establish its safety and reliability.

KG Bhaskara

Corresponding Author: Dr IT Jackson, Institute for Craniofacial and Reconstructive Surgery, 16001 West

Nine Mile Road, 3rd Floor Fischer centre South Field
MI 48075, USA.

Open tip rhinoplasty along with the repair of cleft lip in cleft lip and palate cases

Thomas C, Mishra P. *Br J Plast Surg* 2000; 53:1-6.

Nasal problems inherent in cleft lip are challenging. Controversy exists regarding the best time to perform the surgical correction of these nasal deformities. The present paper is a report on a procedure to perform open tip rhinoplasty at the time of lip repair in unilateral and bilateral cleft lip and palate deformity. Only unilateral and bilateral complete cleft lip with gross nasal deformities were selected for this study of primary open tip rhinoplasty. A total of 69 patients who were operated during the period from 1994 to 1997 were included in the study.

Principles of Millard's rotation - advancement technique and Harshisna's open rhinoplasty techniques were followed with few modifications, ie, a triangular flap of 2mm was incorporated at the advancement flap near the vermillion to break the scar. From the philtrum-columellar points the incision were extended into the nose as standard rim incisions. In bilateral clefts the prolabial incisions are extended into the nose as standard rim incision as in unilateral clefts. Conventionally there is hesitation to do radical nasal correction for the cleft lip patient because of the fear of possible growth retardation.

The present technique, while it achieves excellent postoperative results constantly, doesn't cause any more trauma to the cartilage complex than any of the conventional closed rhinoplasty techniques. Early results obtained by this method appeared to be superior to those by closed rhinoplasty techniques.

KG Bhaskara

Corresponding Authors: C Thomas, Departments of Plastic and Reconstructive Surgery, Khoula Hospital, PO Box 90, Mina al Fahal PC 116, Muscat, Sultanate of Oman.

Haemodynamic and oxygen transport responses in survivors and non-survivors following thermal injury

Holm C, Melcer B, Horbrand F, Worl H H, Von Donnersmarck GH. *Burns* 2000; 26: 25-33.

Measurement of standard circulatory parameters such as blood pressure, heart rate and urine

output provide insufficient information to serve as guides for major burn resuscitation and may not disclose a stage of compensated shock with ongoing inadequate tissue perfusion. If normalisation of these parameters are used as the end point of fluid resuscitation, due to ongoing compensated shock and hypoperfusion, the patient may develop multiple organ failure.

In this study twenty one patients with severe burns were studied during a 16-month period. A central venous catheter and a femoral artery catheter were placed in each patient and connected to an integrated fiber optic monitoring system to measure cardiac output (CO), intrathoracic blood volume (ITBV), systemic vascular resistance (SVR) and Oxygen delivery rate (DO₂).

These parameters were registered together with heart rate, blood pressure and serum lactate and were presented indexed to the body surface area to facilitate comparison between patients. Resuscitation therapy was guided by the result of the haemodynamic monitoring, using the intrathoracic blood volume as a preload indicating parameter.

Out of twenty-one patients six died and 15 survived to leave the intensive care unit after a mean of 32 days of ICU stay. Oxygen transport and global perfusion parameters (CI, DO₂ and serum lactate clearance) were significantly different between survivors and nonsurvivors and were demonstrated to be of predictive value for survival. This study involving invasive haemodynamic monitoring for fluid resuscitation was associated with a substantially higher volume administration (a mean resuscitation volume of 8ml crystalloid/kg Body Weight/1% burn) than with the empirical resuscitation formulae.

Pramod Kumar

Corresponding author : C Holm, Department of Plastic Surgery/Burn center, Klinikum Bogen hausen, Technical university Munich, Academic Teaching Hospital, Munich, Germany. Tel: +499-89- 9270 - 2030; Fax : +499 - 89 - 9270 - 2036; Email: wmuchlbbaner@tonline.de(C.Holm)

'Jumping' Cross finger flaps: a useful technique for salvaging parts in multilating hand injuries

Sabapathy SR, Mohan D, Bharathi RR. Br J Plast Surg 2000; 53: 488-490.

In multiple digital injuries, it is useful to plan the overall reconstruction before hand, so that the availability of good tissue can be foreseen and maximally utilised. In "Jumping" cross finger flaps, only the damaged distal part of the injured digits are filleted, and the flaps developed from viable tissue (essentially salvage flaps) are then used as cross finger flaps for non adjacent injured fingers. Intelligent use of "jumping"

cross finger flaps by authors avoided the need for other reconstructive methods and at the same time, utilized tissue that might have been otherwise discarded.

This study is a report of five patients who had their hands (total four digits and one thumb) reconstructed after multilating hand injury, utilising the potentially useful skin and soft tissue in non-adjacent injured digits. This technique of flap cover is a useful method, when dealing with multiple finger mutilations that need soft tissue cover.

Pramod Kumar

Corresponding Author: Raja Sabapathy S, Consultant Plastic Surgeon, Ganga Hospital, Swarnambika Layout, Coimbatore- 641009, Tamil Nadu, India.

An experiemental study on systemic inflammatory response syndrome induced by sub eschar tissue fluid

Jing CY, PingZ, Xin Zhou R. Burns 2000; 26: 149-155.

Late death in burn patients still remains a challenging problem. The thermal injury can initiate multiple proinflammatory cytokines (Tumour necrosis factor TNF, Interleukin IL)

leading to systemic inflammatory response syndrome (SIRS). In brief, SIRS is manifested by two or more of the following conditions: alteration of body temperature, elevated heart rate (HR), elevated respiratory rate (RR) or alteration of white blood cell count (WBCC). SIRS may lead to multiple organ dysfunction syndrome (MODS) and ultimately to multiple organ failure (MOF). When SIRS is the result of a confirmed infectious process, it is termed sepsis.

The main aim of this study was to investigate the biological activity of subeschar tissue fluid (STF) and its probable mechanism in the genesis of SIRS. The STF Collected from burn patients with III° burn 2-4 days post burn was infused through jugular vein in anaesthetised Wistar rats. Following STF infusion there was significant increase in HR and RR. Twenty four hour after the injection lactate dehydrogenase (LDH), aspartate aminotransferase (AST), creatinine (CR) and blood urea nitrogen (BUN) in blood were significantly higher indicating damage to major organs, which was confirmed by pathological examination of lungs, kidney and liver after sacrificing the rats. Murine peritoneal macrophages cultured with STF produced significantly higher amount of TNF. These inferences were drawn after comparing the results obtained from the study (HHF) was used in place of STF. This study indicates that STF (which has active substances like TNF and endotoxin) are powerful stimuli to incite the expression of many inflammatory cytokines (e.g. TNF, IL-1, IL-2, IL-6) which contribute markedly to early post burn systemic inflammatory response.

Pramod Kumar

Corresponding author: Chen Jing, Burn Unit, Nanfang Hospital, First Military Medical University, Guang Zhou, People's Republic of China.