The Institute of Maxillofacial Prosthetists & Technologists

22nd Biennial Scientific Congress

07–09th September 2006
Brunel University
West London, UK

THE IMPT 22nd SCIENTIFIC CONGRESS – 2005

Dear Delegate

It is my great pleasure and honour to welcome you to the 22nd Scientific Congress on Maxillofacial Prosthetics and Technology, at Brunel University, West London. Once again as at previous Congresses we are able to welcome many of our colleagues from overseas. I sincerely hope that everyone will take something away from this meeting that will help within their own practices.

This promises to be an interesting meeting with a session given over to the progress that has been made with regards to Statutory Registration, also an interesting report on The Institute's role within Agenda for Change and National Occupational Standards.

Kevin Page FIMPT
Chairman of The Institute of Maxillofacial Prosthetists and Technologists.

2005 Congress Organising Committee

Dr M Anwar Bamber
Mr Matt Pilley
Mr Colin Haylock MBE
Mr Richard Eggleton
Mrs Sarah Jones
Mr Kevin Page

Message from Organising Committee

To assist presenters of papers, all delegates are respectfully reminded, that mobile phones and radio pagers etc. should be placed on silent running or switched off in the lecture theatre. Thank you.

The Institute of Maxillofacial Prosthetist and Technologists

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Professor Ashraf Ayoub PhD MDS BDS FDSRCPS, FDSRCS

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Mr I Muir-Nelson MIMPT

Mr M Pilley MIMPT

Mr M Townend MIMPT

Mrs S Parkinson BSc (Hon) MIMPT

Congress Awards

The Wim de Ruiter Delft Plate

Awarded for the most outstanding scientific technical display or workshop. Mr Wim de Ruiter, a commercial laboratory owner from Ridderkirk near Rotterdam, provided a maxillofacial prosthetics service for the Rotterdam area and donated this award in 1985.

The Mount Vernon Award

Awarded for the most outstanding lecture. Designed and fabricated by Chief Maxillofacial Prosthetist and Technologist Mr John Haywarde at Mount Vernon Hospital, this award was first presented at the 1981 IMPT Congress held at Brunel University, London.

The Presidents Award

Awarded for the most outstanding artistic contribution to maxillofacial prosthetics. This award was inaugurated in 1983 at the IMPT International Congress held at The Royal College of Surgeons, London.

The Kidd Award

Awarded for the most outstanding contribution to implant technology. This award was donated by Mr Norman Kidd, who began making sub-periosteal implants in 1956 and upon his retirement, instigated the Kidd Award Plaque in 1997.

The Institute Award

Awarded for the best first time lecture presentation.

2005 Congress Award Assessors

Mr Jason Watson
Mr Richard Eggelton
Dr M Anwar Bamber

The Chairman's Award

Awarded for outstanding services to maxillofacial prosthetics and technology. Donated by Mr Brian Conroy in 1969, the award was commissioned – *"For those who have given signal service for advancement in technology, prosthetics, surgery and other activities that relate to maxillofacial prosthetics and technology"*.

The IMPT Travel Fellowship Award

To provide the means for study and research.

LECTURE TIMETABLE

Wednesday 7th September 2005

Session Title: Craniofacial Surgery. Chairman: Mr Kevin Page

09.15 Delegates to be seated

09.30 Welcome and Opening address
Mr Kevin Page
Induction of the New President Mr Colin Hopper

09.45 Maxillofacial Technology – Computer Science or a Craft Specialty?
Mr Colin Hopper

10.35 Tea/Coffee

10.55 Aspects of Craniofacial Deformity "Keynote Speaker – BAOMS Sponsored Lecture"
Professor Leo Stassen

11.40 How Accurate is the Orthognathic Surgery Workup
Dr M Anwar Bamber

12.10 A New Articulator for Orthognathic Surgery Planning
Mr Fraser Walker

12.40 Paediatric Cranial Reshaping
Mr Colin Haylock MBE

12.55 Questions/Discussion

1.00 Lunch

Session Title: Facial Prosthetics and 3D Digital Technology. Chair: Dr M Anwar Bamber

2.00 3D Digital Technologies for Reconstruction of the Orbital Floor Blowout Fracture
Mr Peter Evans*
Bocca A, Patteon DW, Silvester K, Baxter P, Eggbeer D, Bibb R

2.20 Planning Facial Epithetic Rehabilitation Following Cancer Surgery
Mr Joern Brom

3.00 Infection Control in Ocular Prosthetics
Mr Chris Maryan

3.20 Do Silicone Gels have a Place in Prosthetic Rehabilitation?
Mr Matt J. Pilley and Mr Rob Whitehead

3.50 Questions/Discussion

3.55 Tea/Coffee

4.10 The Prosthetic Management of Trigeminal Trophic Syndrome – A Case Report
Mr Gavin Carmichael

4.30 1 Mistake – 1 Idea
Mr Mark Townend

4.40 Modifications to Extra-Oral Maxillofacial Prosthetic Procedures for Very Young Children
Mr David Morrison

5.00 Digital Technologies in Implant retained, Extra-Oral Prostheses Design and Fabrication
Mr Dominic Eggbeer, Mr Peter Evans, Mr Richard Bibb

5.20 Banff, Baltimore & A Night at the Opera
Mrs Liz Gill

5.40 Questions/Discussion

6.00 Close of Lecture Programme

7.00 Reunion Dinner in Newton Room

LECTURE TIMETABLE

Thursday 8th September

Session Title: Governance – The Profession. Chairman: Mr Jason Watson

09.00 "You're a State Registered What ?"
Mr Mark Cutler

09.30 Discussion

09.40 National Occupational Standards in Healthcare Science
Mr Mark Townend and Mr Steve Worrollo

10.00 Discussion

10.10 Agenda for Change
Mr Dave Allan

10.30 Discussion

10.40 Tea/Coffee

11.00 Practical Workshops, Demonstrations, Poster Display and Trade Displays

Rapid Prototyping: From Data Acquisition to Physical Models-Practical Considerations
Dr Richard Bibb and Mr Andrew Grosvenor

12.00 Poster session

P.1 A Comparative History of Facial Prosthetics
Paramjit Kaur

P.2 Failure Frequency in the Medical Care of Defects
Bernd Reitemeier

P.3 Implant Supported Feeding Aid Prosthesis: Laryngectomy Case
Mark Penn

P.4 Cranial Implants
Barbara Thompson

P.5 Congenital Ear Deformity and Tricho-Rhino-Phalangeal Syndrome
Heidi Silk

P.6 Design Under Pressure
Sarah Parkinson

P7 MSc in Maxillofacial and Craniofacial Technology
Trevor Coward and Cristina Nacher

1.00 Lunch

2.00 Depart for Windsor by Coach Return 6.00pm

7.00 Dinner in Newton Room

LECTURE TIMETABLE

Friday 9th September

Session Title: Cranio-Maxillofacial Prosthetics and Osseointegrated Implants. Chairman: Mr Ian MacLeod MBE

09.00 An Update of Custom Made Prosthetic Abutments used with Implant Retained Prostheses
Mr Barry Edwards

09.10 Aetiology and Incidence of Cranioplasties in the West Midlands Region
Mr Steefan Edmondson

09.20 Selective Attention Deficits in Post-stroke Aphasia
Mr Zain Bamber

09.35 Teaching Model for Reconstruction of the Microtic Ear
Mr Andrew Grosvenor

09.50 Transport Disc Distraction Osteogenesis
Mr Robert MacDonald

10.10 Questions

10.30 Tea and Coffee and Trade Display

11.00 Alternative Impression Technique for Osseointegrated Extra Oral Prosthetic Rehabilitation
Mr Andrew Grosvenor

11.20 Titanium Wonder Metal. Fact or Fiction?
Mr Ian Farnell

11.40 Custom Implants Designed and Manufactured in a Hospital Environment
Mr Philip Kilburn

12.00 Evolution of Oral Implants
Mr Hardev S Coonar FDS RCS

12.30 Questions

1.00 Lunch

Session Chairman: Mr Matt Pilley

2.00 Undergraduate Research at MMU
Mr Chris Maryan

2.40 A Pilot Study Determining the Dimensional Accuracy of Various Rapid Prototyping (RP) Technologies
Mr Andrew Grosvenor

3.00 Tea and Coffee

3.30 The Application of Critical Appraisal Skills to the Maxillofacial Prosthetic Literature
Mr Todd M. Kubon

4.00 'The use of Digital Photography to Aid Contouring of a Facial Orbital Prosthesis'
Mrs Sarah Jones

4.15 Digital Photography in Maxillofacial Prosthetics
Ms Natalie Caulfield

4.30 An Overview of Ocular Prosthetics
Mr Colin Haylock MBE

5.00 Questions

5.15 Close of Congress
Mr Kevin Page

Coaches depart for Banquet and Prizegiving Ceremony 6.45pm, return Midnight

Saturday 10th September

Please vacate rooms and return room keys by 10.00am.

ABSTRACTS

Wednesday 7th September 2005

Hopper, C
Eastman Dental Institute, University College London Hospitals NHS Trust. London
Maxillofacial Technology – Computer Science or a Craft Specialty?
There has been a rapid evolution in so many aspects of maxillofacial surgery that the traditional role of the technologist is undergoing a process of re-evaluation. In this presentation, I will undertake a brief historical review, then look to the evolution of computer designed and manufactured prostheses.
These have a wide range of applications in treatment of facial assymetry, joint replacement and post traumatic and post resection reconstruction. Other advances include computer planning for facial deformity correction and surgical aids that should make orthognathic surgery computer based.
Finally, I will discuss some of the newer developments in the area of tissue engineering in which new mandibles – nerves and even teeth can be grown.

Stassen, L
Aspects of Craniofacial Deformity "Keynote Speaker – BAOMS Sponsored Lecture"
No Abstract Received.

Bamber, M A
Eastman Dental Institute, University College London Hospitals NHS Trust. London
How Accurate is the Orthognathic Surgery Workup
Orthognathic surgery involves complex three dimensional movements based on a series of nonsurgical and surgical procedures. Osteotomies which change the occlusal level to improve function and enhance physical appearance require to be planned preoperatively and carefully.
The main concerns in the orthognathic surgery are the operative reproducibility of the treatment plan, the prediction of soft tissue changes, and postoperative skeletal stability. We identify the influencing factors as; a) inadequacies of planning techniques, b) diversity of surgical skills c) physiological adjustment of the TMJ complex, and d) relapse.
The orthognathic treatment planning usually start with an assessment in Joint orthodontic and orthgnathic clinic, where a preliminary treatment plan is put forward. Pre-op orthodontic is started for a period between 12-18 months. After that period patient is reassessed in the joint orthognathic clinic in order to finalise a treatment plan. Patient is recalled 3 weeks before the operation for a final work up. Surgery is then carried out and usually followed by a period of post op orthodontics for minor occlusal adjustment.

Orthognathic Workup Protocol have these stages
1. impressions
2. occlusal record (squash bite)
3. face bow registration
4. face bow transfer – mounting of maxillary model
5. mounting of mandibular model
6. maxillary model surgery
7. intermediate occlusal wafer
8. mandibular model surgery
9. final occlusal wafer fabrication
10. surgery

The Orthognathic Workup has in total 10 processes all subject to inaccuracies, which will be discussed in this paper.

Walker, F S
West of Scotland Regional Maxillofacial Prosthetics and Technical Service
Southern General Hospital, 1345 Govan Rd, Glasgow. G51 4TF
A New Articulator for Orthognathic Surgery Planning
Anatomical deformities of the skull present considerable difficulties in the registration of suitable points of reference used for the mounting of the maxillary cast. This results in inaccuracies of the maxillary occlusal plane angle which are transferred to the inter-operative occlusal wafers and subsequently to the final surgical position of the repositioned jaws

Wednesday 7th September 2005
(continued)

At the 21st scientific congress I presented the design of a new orthognathic articulator and face bow for planning the surgical correction of craniofacial deformities. Over the last two years the articulator and face bow have been evaluated both clinically and statistically. I would like to share the findings of the study with my colleagues at the conference.

Haylock, C
Charing Cross Hospital, London
Paediatric Cranial Reshaping
This will involve an overview of the surgical technique and cranio-orthoptic dynamic reshaping following surgery.
Plus some case results of none surgical orthoptic techniques.

Evans P L*, Bocca A P, Patton D W, Silvester K C, Baxter P W, Eggbeer D, Bibb R
Morriston Hospital, Swansea, SA6 6NL
Utilising 3D Digital Technologies for Reconstruction of the Orbital Floor Following Blow Out Fracture
Orbital blow out fractures result from a violent blow to the orbital rim and or globe, The forces fracture the orbital floor, either buckling the bony structures or by hydraulic pressure from distortion of the globe. (Warwar et al 2000)
Fractures can result in an increased volume of the orbit, and this may result in enophthalmos. If more than 2 mm of enophthalmos exists, this can create a noticeable imbalance. The globe also can be infraplaced or hypo-ophthalmic compared to the contralateral side. (Cohen et al 2005)
Surgical repair to the orbital floor have used both autogenous and alloplastic materials to span the the defect. (Aitasalo et al 2001). The accuracy to which the orbital volume can be recreated relates to the success in reducing enophthalmos.
This presentation explains a method by which it is possible to digitally recreate the orbital volume of the affected orbit and use this data to produce a custom titanium implant that can be easily placed at surgery to repair the orbital floor, reducing surgery time and improve treatment outcome.

Brom, J
Epithetik-Institut, Ketsch, Germany
Planning Facial Epithetic Rehabilitation Following Cancer Surgery
Three different types of tumour related facial defects are presented in this paper. Pre-surgery, post-operative and definitive considerations regarding prosthetic restoration are included. Problems and available options regarding tumour related facial defects and relevant prosthetic rehabilitation are also covered in this paper.

Maryan, C
Infection Control in Ocular Prosthetics
Current high profile cross infection issues including vCJD, MRSA and necrotizing fasciitis have heightened public and professional awareness, There are few papers relating to cross infection control in facial and ocular prosthetics. Many patients requiring ocular, or facial, prostheses may be immunologically depressed and infections in the anophthalmic socket also have the potential to infect the remaining eye. The procedures in artificial eye construction involve multiple stages with cross infection issues similar to that in dentistry.

Method
The presentation reviews the biology and diseases of the eye and the anophthalmic socket. In addition, current techniques and materials are reviewed in relation to cross infection control. Relevant literature in cross infection control in ocular prosthetics, contact lenses, and dentistry are examined identifying key risk points and current opinion to best practice.

Wednesday 7th September 2005
(continued)

Results
Common organisms in eye sockets are similar to those of normal eyes although with a higher incidence of pathogenic organisms possibly associated with handling of artificial eyes. Staphylococcus aureus was the most common bacterial pathogen followed by Pseudomonas aeruginosa. The efficacy of single use devices and disinfection of impressions in dentistry and contact lenses, is well documented although not in ocular prosthetics. The impact of glove washing and handling of packaging of sterile items on MRSA transmission and the possibility of the artificial eye acting as a reservoir of infection is identified. The use of multi-use acrylic impression trays for ocular is identified as a significant potential cross infection hazard.

Conclusion
There is a need for practitioners to consider single use items wherever possible and evaluate the effectiveness of their current cross infection control procedures. The need for continuing research in this area to characterise the nature of the risk is highlighted. Impression trays, trial eye insertions, and adaptation of existing prostheses are potential risk areas.

Pilley, M J
Clinical Prosthetist, Leicester Royal Infirmary
Whitehead, R
Clinical Prosthetist, St Andrews Institute of Prosthetics and Camouflage
Do Silicone Gels have a place in Prosthetic Rehabilitation?
Although silicone gels are widely used in the special effects, film and television industry, their use in clinical prosthetics has been somewhat limited. This paper outlines various methods of gel prosthesis construction, case studies and the results both long and short term.

Carmichael, G J
Principal MPT/Laboratory Manager East Lancashire Hospitals NHS Trust Maxillo-Facial and Orthodontic Laboratory Burnley General Hospital Casterton Avenue. Burnley BB10 2PQ
The Prosthetic Management of Trigeminal Trophic Syndrome – A Case Report
Trigeminal Trophic Syndrome is a rare condition arising from ablation or trauma of the trigeminal nerve characterised by trigeminal anaesthesia, facial paresthesia and self induced nasal and facial ulceration. This paper will briefly review the aetiology and literature before describing attempts at the prosthetic management of a severe case currently in treatment and the problems encountered.

Townend, M
Poole, England.
1 Mistake – 1 Idea
In the form of a case report, this paper will describe firstly how a problem in retaining an implant supported ear prosthesis was overcome recognising the causative factors of the original problem and secondly, offer an alternative method of constructing semi-permanent moulds for the construction of implant supported prostheses, without the requirement to include the original or duplicate metal substructure bars.

Morrison, D
"Modifications to Extra-Oral Maxillofacial Prosthetic Procedures for Very Young Children"
This paper highlights the fact that providing a prosthesis for a young child that has suffered facial trauma can be problematic due to the child not understanding normally established procedures. Due to possible symptoms of Post-Traumatic Stress Disorder these patients can feel both a lack of control and understanding and thus be in a state of anxiety and defence. Normally accepted levels of reasoning and communication may not apply when attempting to explain procedures, which would in turn affect treatment protocols. In these instances it is important that the clinician understands how trauma may affect the very young patient differently than an adult patient and hence display extra levels of care and patience in order to gain the patient's trust, understanding and co-operation.

Wednesday 7th September 2005
(continued)

Eggbeer, D
PDR, UWIC, Western Avenue, Cardiff, CF5 2YB
Evans, P
Morriston Hospital, Swansea, SA6 6NL
Bibb, R
Head of Medical Applications, PDR, UWIC.

Digital Technologies in Implant Retained, Extra-Oral Prostheses Design and Fabrication

Techniques used in the design and construction of extra-oral facial prosthetics have changed little in forty years and shortcomings of time-consuming handcrafting and the need to embrace more efficient methods of production have been recognised.

3D Scanning, computer-aided design and rapid prototyping technologies have the potential to improve prosthesis design and fabrication efficiency, but studies to date have been limited to relatively simple cases. In addition, little consideration has been given to implant-retained prostheses. Most work has concentrated on transferring tools more commonly found in engineering and product design, with varied results. Prostheses have been successfully produced, but the lack of technologies dedicated to capturing, manipulating and reproducing realistic anatomical forms has been a limiting developmental factor. Consequently, suitable specification levels and protocols towards which advanced technologies may be developed need to be identified if they are to meet the profession's requirements.

This presentation will discuss appropriate methods of capturing anatomy, designing implant-retained facial prostheses and producing components using digital technologies. Clinical viability and shortcomings of the methods will be discussed and future research targets concluded.

Gill, L
Department of Maxillofacial Prosthetics & Orthodontics
Rotherham General Hospital NHS Foundation Trust, Moorgate Road, Rotherham S60 2UD

Banff, Baltimore and A Night at the Opera

In September 2003 I was granted the IMPT Fellows Travel Award. I elected to visit the US Army Centre for Health Promotion and Preventative Medicine in Baltimore, US.

Primarily the Base's main objective has been to determine the most effective proctective measures for sunlight exposure and is a testing ground of various eye protection wear in order that troops don't injure themselves whilst using weapons in the field.

In addition to Baltimore, en route I attended the Advanced Digital Technology Conference in Head and Neck Reconstruction in Banff, Canada.

Thursday 8th September

Cutler, M

"You're a State Registered What ?"

Synopsis of our application to the General Dental Council, and then the Health Professions Council, for statutory regulation of Maxillofacial Prosthetists & Technologists (MPTs) in the UK. To include summary of political decisions effecting our specialty, proposed timetable for registration, relevant statistics, and an overview of the HPC application process

Townend, M
Poole, England
Worrollo, S
Birmingham, England

National Occupational Standards in Healthcare Science

"This project will be developing National Occupational Standards (NOS) for approximately 40 different disciplines within the Healthcare Science workforce. These standards will be developed for practitioners working at all levels and will provide national benchmarks for competent performance within the Healthcare sector. Integral to the project outcomes will be the development of accompanying assessment strategies, the identification of educational requirements and delivery mechanisms and the definition of a clear implementation strategy."

www.noshcs.co.uk national occupational standards in healthcare science accessed 16/05/05.

The aim of this short paper is to present The IMPT's involvement and contribution to this project and in so doing inform the membership of The IMPT.

ABSTRACTS

Thursday 8th September
(continued)

Allan, D
Dept of Maxillofacial Prosthetics
Queen Victoria Hospital, East Grinstead, West Sussex RH19 3DZ

Agenda for Change

Agenda For Change (AfC) will present as the largest national change in terms and conditions for MPTs that most of us will encounter within our working lives. By the time the IMPT meets for its biannual conference at Brunel University 2005 a national picture should have developed of the overall assimilation of MPTs. The presentation will identify the past steps taken by the IMPT to prepare members for AfC and to give as accurate a picture as possible of the national grading outcome of our profession.

Practical Workshops, Demonstrations and Poster Displays

Bibb, R
Head of Medical Applications, PDR, University of Wales Institute, Cardiff, UK.
Grosvenor, A
Maxillofacial Prosthetist and Technologist, COMPRU, Caritas Health Group, Edmonton, Alberta, Canada.

Rapid Prototyping: From Data Acquisition to Physical Models-Practical Considerations

This workshop is intended for both beginner and advanced users of RP technologies. It will address technical issues related to acquisition of data, data file formats and practical issue associated with digital data management. Issues such as model sterilization and storage will also be addressed. Examples of patient case studies, where these technologies have been employed, will also be shown. With technology changing at such a rapid rate, even the most advanced user will benefit from this review of technical and practical considerations, as it lays the foundation necessary to work in 3-D medical modelling.

Kaur, P
Northern General Hospital, Sheffield

A Comparative History of Facial Prosthetics

Aim
To investigate the types of facial defects sustained in the time periods of the First World War, (1914-1918), Second world War, (1939-1945), and the "Modern Era" and the methods of treatment provided for patients i.e. surgical and prosthetic rehabilitation.
Method and Materials: The different surgical and prosthetic techniques, materials and retention methods used in all three- time periods are described and discussed.

Conclusion
Materials available today are softer and more realistic looking than materials used in the World War periods and retention methods have been improved.
Extra oral osseointegration eliminates the use of adhesives and allows a secure and reliable method of retention, which is easy to use and achieves an aesthetically pleasing prosthesis.
Further development and research in CAD/CAM systems is being undertaken to enable a more efficient method in the fabrication of facial prosthetics.

Reitemeier, B
Universitätsklinik Dresden, Germany
Brom, J
Epithetik-Institut, Ketsch, Germany

Failure Frequency in the Medical Care of Defects

The target of the survey among the IASPE-members was to get an objective picture of the failure frequency in the medical care of defects.
The questionnaire was given out to all members of our society and sent by mail in addition. The questionnaire was aimed at finding the frequency of means of treatment in surgical prosthetics and epithetics. At the same time information about the frequency of failures observed were asked for.
As a result of the investigation it must be stated that unfortunately only 19 members took part in the investigation! The replies showed that those members who returned the questionnaire had produced orbital-, ear-, nose- and cheek epitheses. Four fifths of them stated that they had also made resection prostheses and nose olives so far. About half of them have experience of ear parts, individual tracheal cannulas and individual breathing masks. The other means of treatment were rarely indicated. Concerning the frequency the following sequence showed: orbital epitheses, OK-resection prostheses, nose epitheses, nose olives, individual tracheal cannulas and individual breathing masks.

Thursday 8th September
(continued)

A number of relevant pointers for practical use were gathered from the frequently detected failures. A leaflet with this information will be distributed at the symposium to all participants after this presentation.
Despite the low number of returns of the questionnaire, the first sectors of priority can be derived for the work group Quality Assurance of the IASPE. Indicators for the subject matter for future meetings can at least be derived from this.

Penn, M
Implant-supported Feeding-aid Prosthesis
Implant-supported feeding-aid prosthesis following total glossectomy/laryngectomy and segmental mandibulectomy.
Total glossectomy combined with total laryngectomy is an infrequent radical onco-surgical operation. Custom made tongue prostheses and palatal augmentation devices are currently the treatments of choice to help patients in eating and swallowing.

Patient report
A 46 years old man was diagnosed with Stage IV Squamous Cell Carcinoma (T4N1M0) at right side of the base of the tongue. Total glossectomy and total laryngectomy with radical neck dissection were performed after initial chemo/radiotherapy (60 Gy). Due to cancer recurrence on his right side one year later, segmental mandibulectomy was carried out. Ablative and restorative surgeries phase lasted up to 8 years.
The mandibular arch was edentulous and swallowing function was lost. The patient could feed himself only by using a wide feeding tube leading to the pharynx.

Treatment
A prosthesis was made of an infra structure as a milled bar screwed to osseointegrated implants in the grafted lower jaw. The removable supra structure of the prosthesis enabled the patient to crush food with the incisors and sip it with a drink of choice on a lingual metal plane inclined towards the pharynx and then to the esophagus. In addition, maxillomandibular relations and facial appearance were improved by intraoral lip plumping.

Conclusion
The lingual metal plane slope directed the food into the pharynx with no need for voluminous tongue prosthesis. Palatal augmentation device was not constructed as this can only be effective in cases with residual swallowing function. Patient's motivation accompanied by family support helped tailoring a reasonably functional prosthesis in an extremely compromised post surgical patient.

Thomson, B A
West of Scotland Regional Maxillofacial Prosthetics and Technical Service
Southern General Hospital, 1345 Govan Rd, Glasgow. G51 4TF
Cranial Implants
Cranial implants have been manufactured in Maxillofacial Laboratories for a considerable time. In recent years titanium sheet has been the choice of implant material in the West of Scotland. The poster presentation shows a short history of cranial implants. Also shown are the results of a 5 year retrospective study of the implants fitted in the West of Scotland.

Silk, H
Poole Hospital NHS Trust, England
Congenital Ear Deformity and Tricho-Rhino-Phalangeal Syndrome. A Case Report
A case study of a child with a congenital ear deformity and Tricho-rhino-phalangeal syndrome type 2. Implant position was determined using three-dimensional computer aided design (3D-CAD) and rapid prototyping (RP), and an implant placement splint fabricated.
Three implants were placed, leaving one sleeping due to the bone quality and thickness. The case study gives a brief outline of the syndrome, reasons for need of 3D-CAD and RP, and the post-operative results of the patient both aesthetically and psychologically.

ABSTRACTS

Thursday 8th September
(continued)

Parkinson, S
Maxillofacial laboratory
St. Richards' Hospital, Chichester, West Sussex

Design Under Pressure

The overall aim was to construct a custom made appliance that provides pressure to an intended site using a design that would encourage wear to prevent keloid recurrence.
Keloids are benign fibrous growths formed due to a defect in the wound healing process i.e. excess production of wound collagen. Unlike hypertrophic scars, keloids tend to spread, invading the surrounding healthy skin beyond the wound margin.
They can form as a result of trauma, ear piercing, tattoos, insect bites, acne, lacerations, abrasions, surgery, vaccinations or burns.
This is a case history of a patient who presented with recurrence of keloids from multi-piercing on the helix of the right ear. She had previously undergone surgery and also had steroids injected to the keloid area.
Prescribed a conventional pressure appliance consisting of two buttons of clear acrylic connected by the active spring but was reluctant to wear it, resulting in recurrence. The patient was prepared to wear an earring in this area therefore a modified design was the outcome of the final appliance.

Intended learning outcomes
Share ideas of developing practice
Improve quality of care to patient
Enhance compliance by involving patient in care.

References
J Edwards Scar management, Nursing Standard, Sept 10-16 2003; 17, 52, pg 39-42
KJG Munro BSc Hypertrophic & keloid scars, Journal of Wound Care, March 1995; 4, 3. pg 143-148. May 1995; 4, 5 pg 243-245.
K Davies RGN Nurse-led management of hypertrophic & keloid scars, Nursing Times, Feb 3-9 2004; 100, 5 pg 40-44.

Coward, T
Lecturer in Craniofacial & Maxillofacial Technology
Nacher-Garcia, C
Principle Maxillofacial Prosthetist & Technologist
Guy's, King's & St. Thomas' Dental Institute, Kings College London

MSc in Maxillofacial and Craniofacial Technology

Maxillofacial Prosthetists & technologists (MPT's) provide a vital service to patients receiving treatment for injury or disease to the head, neck, and missing body parts (e.g. breast, digits). The MPT's role has increasingly developed over the years requiring complex technical skills and greater clinical involvement. MPT's work within a multidisciplinary team and rehabilitate patients with a wide range of conditions. The purpose of the MSc programme is to provide society with a group of professionals dedicated to providing a high quality service in Maxillofacial Technology which is able to deliver both the clinical and technical service with the ability to interact with the maxillofacial team and other healthcare workers.
The programme provides opportunities for students to develop and demonstrate extended knowledge/understanding and advanced skills including: anatomy, histology, pathology of dental and oral tissues, research methodology, intra/extra oral implantology, material science, oncology, craniofacial abnormalities and digital technology.

Friday 9th September

Edwards, B
Dept of Maxillofacial Prosthetics
Queen Victoria Hospital, East Grinstead, West Sussex RH19 3DZ

An Update of Custom Made Prosthetic Abutments used with Implant Retained Prostheses

This presentation aims to describe the various methods of construction of custom made mushroom type prosthetic abutments and this units experience so far since details of the system were published last year in our journal. I intend to include details of fabrication and advantages of favoured methods of construction as well as an example of the systems adaptability. I would also compare it to the bar and clip system more commonly used.

Friday 9th September
(continued)

Edmondson, S
University Hospital Birmingham

Aetiology and Incidence of Cranioplasties in the West Midlands Region

This study consists of 75 patients referred to the Queen Elizabeth Hospital in Birmingham for cranioplasties. All patients were from the West Midlands region who have had craniotomies in the last four years. The data collected was analysed for aetiology, defect site and demographic trends in addition to examining the frequency of use and success rate of titanium cranioplasties, acrylic cranioplasties and replacing the bone flap. The results showed that titanium was the most frequently used material for cranioplasty. The demographic data suggests that among the different areas in the West Midlands, the highest proportion of patients treated lived in Birmingham and Solihull. The most common defect was caused by trauma and figures suggest that males in the 17-30 age group most likely to present with a cranial defect. The results from this study support previous findings that titanium is the most frequently used and successful type of cranioplasty. A limitation of this study is the small numbers of acrylic cranioplasties and bone flaps in the data. Future research needs to look at demographic trends over a larger area and increased time span, with a wider variety of cranioplasty methods and procedures. It would be useful to compare other centres for treatment methods and incidence of defects.

Bamber, Z
Chandler House, UCL
Royal Free and University College Medical School, London

Selective Attention Deficits in Post-stroke Aphasia

There is literature reporting that many post-stroke aphasic patients may have selective attention deficits. These deficits can prevent a patient from attending to information given to them by their clinician. This is especially true if the information is complex or has strong emotional connotations, such as the pros or cons of a facial prosthesis. The Test of Everyday Attention (TEA, Robertson, Ward, Ridgeway, and Nimmo-Smith, 1994) has two subtests, the Map Search and the Telephone Search, which both purport to measure selective attention. Like most other assessments of selective attention which involve the patient completing a practical task, the TEA was designed for post-stroke patients in general. Its specific applicability to aphasic patients is therefore unclear. This study was a group study in which the two TEA subtests were administered to 16 post-stroke aphasic participants from the Acquired Communication Disorders Clinic at UCL. Their performance on both subtests was found to correlate significantly with their scores on a standard, baseline measure of attention. This suggests that we can use practical tests like the TEA to identify those patients who have a selective attention deficit, and adjust our communication accordingly.

Grosvenor, A
COMPRU, Misericordia Community Hospital, Caritas Health Group, Edmonton, Alberta, Canada

Teaching Model for Reconstruction of the Microtic Ear

The surgical correction of microtia is a complex challenge with a significant learning curve. Our objective was to provide an interactive and anatomically correct teaching model of a typical lobule-type microtic ear.

The model was created using technology from the Craniofacial Osseointegration and Maxillofacial Rehabilitation Unit (COMPRU) and collaboration with the University of Alberta, Faculty of Industrial Design. Materials were selected according to their bonding characteristics, ability to create a realistic tactile sense, and simulate the feel of surgical manipulation. A system of progressive moulds was then used to create a silicone-based subcutaneous and dermal-epidermal layer. Between these layers was embedded a simulated silicone microtic cartilage remnant and temporoparietal fascia.

To facilitate the efficiency of creating these models, the prototype was scanned using Computerised Tomography. The resultant digital construct was separated into its component parts yielding a 3-piece progressive virtual mould, which was subsequently milled out in brass alloy.

Measuring 5.3 x 6.5 inches, the model is designed for a realistic surgical simulation of Stage I Nagata-type reconstruction. Users are provided with a template of the model's surface that may be used to design incisions and draw important surface landmarks. A piece of silicone costal cartilage having similar tactile sense and surgical feel to that of real cartilage is also included. This enables the user to carve a framework, which can subsequently be inserted into the model following dissection.

Future extension of this model will include other varieties of ear deformities.

Friday 9th September
(continued)

MacDonald, R
West of Scotland Regional Maxillofacial Prosthetics and Technical Service
Southern General Hospital, 1345 Govan Rd, Glasgow. G51 4TF

Transport Disc Distraction Osteogenesis

Distraction osteogenesis has become a popular technique for the correction of cranio facial deformities. Transport disc distraction oteogenesis provides a method of regeneration of resected areas of the mandible. Commercially available devices, although effective produce extreme soft tissue scarring in the chin area. Presented will be a newly designed intra-oral device, which addresses these problems.

Grosvenor, A
COMPRU, Misericordia Community Hospital, Caritas Health Group, Edmonton, Alberta, Canada

Alternative Impression Technique for Osseointegrated Extra Oral Prosthetic Rehabilitation

Craniofacial osseointegrated implants are an established alternative means of retention used in the field of facial prosthetic rehabilitation. Static facial impressions may produce a poorly fitting final prosthesis due to the mobility of soft tissue and the movement of the mandible during mastication or speech. This paper demonstrates an impression and a technical procedure for the construction of an osseointegrated gold clip retained, functionally fitting auricular prosthesis.

The superstructure is fabricated from 1.9mm gold round bar and is designed mid point to mid point across two osseointegrated implants placed in the mastoid region. This is to minimise torque on the implants and to assist with hygiene. A secondary functional, peripheral 'pick up' impression is taken utilising the wax form, with the substructure in situ. The 'fitting' surface is sculpted. Stainless steel bar replicas are inserted into the gold clips within the acrylic substructure and a high compressive artificial stone cast is poured. The wax form is clinically verified. The final waxing, processing and finishing procedures are carried out in the traditional manner.

The final prosthesis has well defined and well fitting margins during dynamic masticatory movements. The prosthesis also requires minimal finishing to the acrylic and silicone elastomer 'fitting' surface. Ideally, the gold bar should not be removed from the patient after the initial connection. This technique renders any future removal of the connected gold superstructure redundant when additional prostheses are fabricated.

Farnell, I

Titanium Wonder Metal. Fact or Fiction?

This presentation looks at the problems encountered whilst trying to cast titanium frameworks for the maxillofacial laboratory. It has proven extremely difficult to cast complete frame works without any faults even when following the manufacturers instructions to the letter. It was therefore decided to carry out tests to try and find the best methods for spruing and casting titanium and these findings are presented here. Difficulties with casting titanium frameworks are however still being encountered and the presentation questions wether it is worth laboratories changing from the more conventional casting alloys such as Co-Cr and gold especially considering the high costs involved.

Kilburn, P
Software Sales Manager, Materialise

Custom Implants Designed and Manufactured in a Hospital Environment

Materialise is a Belgium based company with offices throughout the world. It has been established for 15 years initially starting as a Rapid Prototyping service bureau, but quickly moved into software development. The software division is divided into 2 divisions, technical and medical. The technical software is used to manipulate, fix and prepare files that are to be built using Rapid Prototyping techniques. The Medical software used to manipulate and post-process CT, MRI and (aligned) bitmap images, for down stream applications and is the focus of this paper.

The Mimics software was initially released 10 years ago and was used to translate 2D, CT and MRI data into 3D models that could then built on Rapid Prototyping machines. The models were and are still used for clinical planning, preparing bone resections and as templates for implants such as cranial plates. The down stream applications of the data generated have been limited, and this has held back the take up of this technology.

Friday 9th September
(continued)

However there have been 2 leaps forward in technology over the last few months moving custom implant design and manufacture into new territory. Materialise have released a new module within Mimics giving you the tools to design the implants directly onto your CT or MRI data. The Simulation module enables you to cut and mirror bone to fill in holes or deformities, then using advanced boolean functions a perfect fit can be achieved. The Mimics currently works well for defects that can be mirrored, but not for midline defects. For this there are digital based CAD packages that can work directly on the 3D models that are output from Mimics. These give you the full CAD functionality on the STL data. Standard CAD packages would normally require days of work to import the data ready for the use in implant design. In both instances the implants can be imported back into the Mimics software to check the fit on the original CT and MRI data.
The final piece of the jigsaw is the developments of Rapid Manufacturing machines that can manufacture these implant designs in implantable materials, such as Titanium, Chrome Cobalt and Stainless steel. These are additive machines so are not restricted in the geometries they can produce. Also as the technology develops should become a push button process, taking the implant designs straight from CAD into the RM machines. Materials from these machines are currently undergoing tissue trials and FDA submissions. The day that the complete design and manufacturing cycle for custom made implants under the control of the surgeons and hospital based technicians is almost upon us.

Coonar, H
Evolution of Oral Implants
No Abstract Received.

Maryan, C
Undergraduate Research at Manchester Metropolitan University and its implications for the Practice of Maxillofacial Prosthetics and Technology (MPT)

Background
The first students graduated from Manchester Metropolitan University with a BSc(Hons) in Dental Technology in 1994. In 2001 Diploma in Professional studies in Maxillofacial prosthetics & technology (a degree level programme) commenced. These programmes include a major research project. To date nearly 300 students have undertaken a research project with a significant percentage of direct relevance to MPT.

Method
The range of research projects was reviewed to identify issues for future MPT research and the implications for evidence based practice. The review identified issues with materials and techniques used, practice outcomes, and clinical audits.

Results
Many projects have identified the very limited range of published research auditing clinical outcomes, manufacturing techniques, treatment patterns, or the implications of these for future practice and workforce. Examples of research outcomes and issues for evidence based practice are presented.

Conclusion
MPT in the UK does not appear to be a research lead discipline, which could have professional, ethical, and litigious impact in future practice. A research ethos, audit, peer review and an emphasis on evidence based practice should be central to practice in all MPT units.

Grosvenor, A
COMPRU, Misericordia Community Hospital, Caritas Health Group, Edmonton, Alberta, Canada
A Pilot Study Determining the Dimensional Accuracy of Various Rapid Prototyping (RP) Technologies
In recent years, the use of Rapid Prototyping (RP) in the field of surgery and associated sciences has increased dramatically. Consequently, there are many RP options available to users of the technology. However, it is unclear whether the RP systems produce models with equivalent dimensional accuracy. This paper evaluates the dimensional accuracy of five three-dimensional RP devices: stereolithography modelling (SLA), wax multi-jet modelling (W/MJM), acrylic multi-jet modelling (A/MJM), fused deposition modelling (FDM), and selective laser sintering (SLS) technologies.

Friday 9th September
(continued)

A cuboid of pre-determined cubic and linear dimensions was measured in a Computer Aided Design (CAD) program (Magics® 8.01, Materialise, Ann Arbor, MI, USA). This digital information was transmitted to each of the three-dimensional RP devices and produced in solid form. This process was repeated using each of the RP devices.
The resultant solid forms were measured and compared to the original data set to determine whether they were producing equivalent models. The five devices produced models of dissimilar linear values across the X, Y and Z-axis when compared with the original data set. All but one of the RP devices produced models that yielded results of an accuracy of 99.32% or greater when compared to the original data set.
It is evident from this study that RP technology is capable of reproducing geometric shapes with great precision. A follow up study is planned to examine accuracies of organic shapes, which are more suited to medical modelling and design.

Kubon, T M
The Application of Critical Appraisal Skills to the Maxillofacial Prosthetic Literature.
Research methodology and Evidence Based Practice have become a part of educational curricula for most healthcare professions. Research and Development is requisite for professional advancement, whereas Evidence Based Practice imparts the tools needed to become an independent lifelong learner amid the avalanche of useful and useless information. Fundamental to both is the ability to critically appraise the literature. This presentation will illustrate the tools of Evidence Based Practice, the application of critical appraisal skills to the maxillofacial prosthetic literature and the importance of Research and Development.

Jones, S
'The use of Digital Photography to Aid Contouring of a Facial Orbital Prosthesis'
No Abstract Received.

Caulfield, N
Maxillofacial Prosthetist, University Hospital Birmingham
Digital Photography in Maxillofacial Prosthetics
With increasing popularity of the Internet and cheaper costs of computing, digital imaging has become popular in many professions and trades, such as; advertising, estate agents, media, dental and medical physicians (Spiegel & Singer, 2000, Dunn and Beckler, 2001.).
Has this trend also spread to the profession of maxillofacial technology? Maxillofacial Prosthetists require photo-documentation for patient files, teaching, medico-legal records and treatment assessments (France, 2003). This type of technology in professional use raises many questions and issues regarding, ease of use, cost, storage, printing and many others.
A telephone questionnaire was conducted to 20 maxillofacial prosthetists to determine if and how digital photography is being used in maxillofacial prosthetics. Additional information such as, camera cost, consent, protection and security of digital images was also gathered. The participants were all selected randomly and assured anonymity.
The findings were that Maxillofacial Prosthetists are using digital photography in similar ways and have shown a typical pattern of uptake of the technology in agreement with Rogers Theory of adoption of Innovation (Rogers, 1983).
Also the study showed there are inconsistencies between Prosthetists understanding of data protection principles and obtaining written consent for their digital images.

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Rogers E.M., 1983. The Diffusions of Innovation. Pub New York; Free Press.

Haylock, C
An Overview of Ocular Prosthetics
No Abstract Received.

DELEGATES

LORY, Richard	Isleworth	UK
TOWNEND, Mark	Poole	UK
SILK, Heidi	Poole	UK
NOWAK, Peter	Cambridge	UK
FYNES, Damian	York	UK
GARRAWAY, Paula	Chichester	UK
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CHAPMAN, Mark	Bury	UK
DOUGLAS, John	Stevenage	UK
BARRETT, Philip	Cardiff	UK

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THORPE, Robin	Derby	UK
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PAGE, Kevin	Bristol	UK
BUCKLE, John	High Wycombe	UK
VERDONK, Henk	Maastricht	Netherlands
WHITEHEAD, Robert	Leicester	UK

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