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WJMER

World Journal of Medical Education and Research

An Official Publication of the Education and Research Division of Doctors Academy

Abstracts from Doctors Academy Events:

'Winner of Winners' presentations -
5th International Medical Summer School, 2013

3rd International Academic and Research Conference, 2013

- Dental-derived Stem Cells and Whole Tooth Regeneration: An Overview
- A Career in Child and Adolescent Psychiatry
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The Use of Geometric Morphometrics as a New Method to Analyse Glenoid Bone Loss after Shoulder Dislocation

Role of Cloud Computing in the Provision of Healthcare

Management of Major Trauma: A Malaysian Perspective

Introduction

The World Journal of Medical Education and Research (WJMER) (ISSN 2052-1715) is an online publication of the Doctors Academy Group of Educational Establishments. Published on a quarterly basis, the aim of the journal is to promote academia and research amongst members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from around the world. The principal objective of this journal is to encourage the aforementioned, from developing countries in particular, to publish their work. The journal intends to promote the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting edge technology and those who need to innovate within their resource constraints. It is our hope that this will help to develop medical knowledge and to provide optimal clinical care in different settings. We envisage an incessant stream of information flowing along the channels that WJMER will create and that a surfeit of ideas will be gleaned from this process. We look forward to sharing these experiences with our readers in our editions. We are honoured to welcome you to WJMER.

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Abstracts from The International Academic and Research Conference

17th August 2013, University Place, University of Manchester

Prize Winning Abstracts

The following three abstracts have been selected as the best in their respective category. They were chosen from the 470 abstracts that were submitted for consideration in the 3rd International Academic and Research Conference 2013.

Doctors Academy Prize for Best Abstract in the Clinical and Laboratory-Based Research Category

ECD and DCD Renal Allografts in the West of Scotland: Their Place in the Kidney Allocation Process

Hesse KWX*
University of Glasgow, Glasgow, UK

Background: A rising disparity between demand and availability means organs from donations after circulatory death (DCD) are increasingly used. The purpose of this study was to report outcomes of DCD renal allografts from a single centre.

Methods: The study was a retrospective analysis of prospectively gathered data from a single centre for renal transplants performed between 2001 and 2010 inclusive. Patients were placed into four strata: DBD:SCD, DBD:ECD, DCD:SCD, DCD:ECD. Kaplan-Meier survival analysis was undertaken on the primary long-term outcomes: 5-year graft survival and patient survival. Differences in CIT, WIT, and donor and recipient characteristics were also compared, using appropriate statistical tests. $p<0.05$ was defined as significant.

Results: 729 renal transplants were performed. There was a significant difference in graft survival between groups ($p=0.005$) with ECD organs doing worse than SCD organs. Recipients of ECD organs were generally older ($p<0.05$) and longer on dialysis ($p<0.05$). For patient survival, there was a difference that did not achieve significance ($p=0.065$). DCD:SCD organs had better outcomes than DBD:SCD organs. The CIT was significantly shorter in DCD:SCD organs, compared to DBD:SCD organs ($p<0.001$).

Conclusions: ECD organs do worse than SCD organs, yet a refined allocation process that reduces CIT assault and considers recipient age and the chronicity of the patient's renal disease can improve their results. DCD allografts are at least comparable to DBD kidneys, probably due to a shorter CIT, and this should encourage their integration into the national allocation scheme, with guidelines specific to them. Our study's main limitation is a small DCD, particularly DCD:ECD, group.

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Doctors Academy Prize for Best Abstract in the Clinical Audit and Service Evaluation Category

Obesity and prescription of combined oral contraception in the general practice: findings from a closed audit loop

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Background: Combined oral contraception (COC) pill is the most commonly used contraception in the UK. Females on COC with an increased body mass index (BMI) are at a higher risk of myocardial infarction (MI) and venous thromboembolism (VTE). A lack of routine BMI recording has been noticed in our practice leading to inadequate COC counselling.

Methods: This audit was conducted at a single General Practice Surgery managing approximately 10,000 patients, in East Yorkshire, UK. As per the UK Medical Eligibility Criteria (UKMEC), we set a standard of an annual follow-up in 100% of women on the COC with a BMI of 30-34kg/m²; 0% of women with a BMI>35kg/m² should be on the COC pill.

Results: Initial data was collected over March 2011-2012. Out of 307 women on COC, 28 (9.12%) had a BMI of 30-34kg/m² with a careful follow-up in 26 (92.86%). Six (1.95%) women with a BMI>35kg/m² were prescribed the COC. Proposed changes included departmental teaching on COC prescription and addition of BMI to the "COC template" on our clinical data system. Repeat data collection 6 months following change implementation revealed an improvement in careful follow-up of 23 (96%) females on COC with a BMI of 30-34kg/m². However, out of 295 women on the pill, 5 (1.7%) had a BMI>35kg/m².

Conclusion: Education of all staff involved in COC prescribing is essential. The "COC template" on our clinical system was the most effective prompt for regular BMI assessment. Calculation of BMI should be a core part of COC prescription.

Doctors Academy Prize for Best Abstract in the Clinical and Patient-Related Work Category

An unusual presentation of pulmonary-renal syndrome: Learning points for prompt diagnosis and management

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Background: Pulmonary-renal syndrome is defined as the combination of diffuse alveolar haemorrhage and glomerulonephritis. Patients may present with severe respiratory and/or renal failure; with a mortality of 25-50%, their outcome is based on early diagnosis and aggressive management.

Presentation: A 61-year-old lady presented to the Emergency Department with a 5-week history of malaise, nausea and epigastric pain followed by an acute episode of reported haematemesis and anuria. She was alert and orientated but tachycardic and hypotensive; the remainder of her examination was unremarkable.

Investigation: An arterial blood gas demonstrated a partially compensated metabolic acidosis and haemoglobin of 8.9g/dL; her initial chest X-ray was normal. First managed as an acute upper GI bleed, blood tests later revealed acute renal failure with creatinine 2713µmol/L and urea 90.6mmol/L; urinalysis was markedly positive for both blood and protein and subsequent testing for p-anticytoplasmic antibodies was positive.

Management: Following the diagnosis of pulmonary-renal syndrome, this lady was managed in the intensive care unit with methylprednisolone, ultrafiltration and plasma exchange. Over forty-eight hours she developed frank haemoptysis and type-1 respiratory failure with a chest X-ray demonstrating bilateral airspace shadowing consistent with pulmonary haemorrhage. Following further treatment with cyclophosphamide and then rituximab, she eventually made a good recovery and remains independent of dialysis.

Discussion and Learning Points: Pulmonary-renal syndrome is a life-threatening condition with an acute onset and fulminant course if left untreated. Despite variable presentations, early diagnosis through timely investigation and the immediate initiation of appropriate management is crucial.

Abstracts from the 'Winner of Winners' Competition

The first prize winners of the oral and poster presentations from various UK national student conferences were selected to present their work to the entire 5th International Medical Summer School 2013 that comprised of 220 delegates. In addition, the winner of the oral presentation from the Indian National Medical Students Association Annual Meeting 2013, Kolkata, India, was also offered the chance to present in this competition. From this, the best presenter was selected to give a short talk at the 3rd International Academic and Research Conference 2013.

Winner of Winners – Abstract 1
(From Hull-York Surgical Society Conference)

An Introduction to hand allograft

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The loss of one or both hands can be detrimental to an individual's quality of life. Losing a hand does not simply result in loss of function, but loss of ability to express one's personality, to gesticulate, and to take part in cultural behaviours such as wearing a wedding ring. Although there are alternatives to transplant such as use of prosthesis and reimplantation of the damaged hand, rarely are they able to match the natural look and functional possibilities of a transplanted hand. To a small number of carefully selected patients, hand transplant can restore a missing hand (or hands), and regain a similar look, and potentially similar function to a normal hand. Past failures have been learnt from and so far, promising results are being seen. Extrinsic function has been found to return within days, and intrinsic after 9-15 months. Importantly, protective sensory function returns within 12 months. However, the procedure is not without its risks. A life time of immunosuppressive therapy may cause organ damage and increase cancer risk, episodes of acute rejection are almost certain, and there is no guarantee as to the longevity of the hand. Therefore alternative treatments must not be overlooked before opting for hand transplant.

Winner of Winners – Abstract 2
(From National Medical Student Paediatric Conference)

Non-attendance at paediatric outpatient appointments in Brighton; a quality improvement project

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Background: There are a considerable number of non-attendances at paediatric outpatient appointments in Brighton despite appointment letters and SMS reminders sent a week before.

Aim: To determine the reasons why families do not attend their appointments with a view to change the service provided to achieve better patient outcomes and maximise NHS financial resources.

Method: Over a 2 month period the families of the children who did not attend (DNA) where called and were asked a series of standardised questions.

Results: Between the 19th November- 14th December 2012 there were 107 DNAs whilst between 14th January- 15th February 2013 there were 170. The main reasons for not attending, according to those who were contacted across the 2 months, are listed from most to least significant: forgetfulness (42.4%), the hospital not informing families of the appointment (20.2%), the hospital not recording that parents had rescheduled (15.1%), that parents were too busy to take their child (11.1%), that the child was too unwell to attend (6.1%) and finally because the parents felt the appointment was unnecessary (5.1%). Nearly 47% of families did not answer when called, but correct contact information was an issue as 17.7% of the DNAs had an incorrect number recorded or no number recorded.

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Winner of Winners – Abstract 3
(From Barts & The London National Undergraduate Surgical Conference)

Spring-mediated cranioplasty for Mercedes-Benz Syndrome

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Craniosynostosis is a rare condition in which the fibrous sutures of the infant skull are prematurely ossified preventing normal skull growth. The cranium is forced to grow in a direction parallel to the affected sutures, resulting in abnormal skull shape. Ineffective compensation can lead to increased intracranial pressure and its sequelae (impaired vision, sleep, feeding and mental development).

This case describes a six-month old infant with bi-lambdoid and sagittal synostosis; known, due to its pattern, as 'Mercedes-Benz' syndrome. Restriction in cranial growth caused compensatory expansion leading to marked scaphocephaly, a hypoplastic posterior cranium and an occipital concavity. Effective treatment for this specific type of craniosynostosis is described, using a combined plastic and neurosurgical approach. The intraoperative techniques employed included surgical suture excision and spring-mediated cranioplasty in order to achieve cranial vault reconstruction with good cosmesis. It demonstrates the importance of early intervention to prevent potential complications of craniosynostosis, with excellent post-operative prognosis.

Winner of Winners – Abstract 4
(From National Undergraduate & Foundation Surgery Conference)

Readability assessment of online patient directed material related to Colonoscopy

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Background: With the move towards a greater emphasis on patient-centred care it is only right that patient education materials reflect the national reading age. In 2003, an estimated 12.5 million online health-related searches were conducted globally each day. Patients are able to access a plethora of information online but in order to make an informed choice, they should be able to understand and interpret the information directed to them.

Objective: To assess the readability of online patient directed material regarding colonoscopy, to ascertain whether the material met the UK's average reading level.

Method: A systematic search was performed using the phrase 'Colonoscopy procedure' on three internet search engines: Google, Yahoo, Bing. The readability of 50 websites were assessed using the following readability indices: Gunning Frequency of Gobbledygook Index, the Flesch Reading Ease Score and Simple Measure of Gobbledygook.

Results: The quality of online information regarding colonoscopy is highly variable. The following results demonstrate that the majority of online information regarding colonoscopy would require a patient to have at least secondary school knowledge to understand the prose.

Conclusion: Healthcare professionals, should endeavour to recommend websites, which give a basic overview of what a colonoscopy entails. Websites should use a standard readability tool to ascertain the readability of the material and revise the text to meet national readability recommendations. Failure to do so may result in a patient being unable to express their concerns or make an informed decision.

Winner of Winners – Abstract 5
(From Barts & The London National Undergraduate Surgical Conference)

Examining the Effects of in situ Metal-on-Metal Hip Implants on Bone Resorption in Patients

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Introduction: Patients with cobalt-chromium alloy Metal-on-Metal (MoM) hip implants produce nanoscopic metal debris ions which are released into surrounding tissues. This can cause inflammatory tissue reactions, such as osteolysis, resulting in implant failure requiring revision surgery. Early detection of tissue damage is key to successful revision surgery. The objective of this study was to histologically observe samples of hip bone taken during revision surgery. The presence of bone resorbing osteoclasts was examined and related to clinical parameters.

Methods: Six peri-prosthetic bone samples were randomly selected from patients undergoing MoM hip revision surgery at Cardiff and Vale Orthopaedic Centre. The samples were decalcified, wax embedded and 5µm sections prepared. Sections were stained with Hematoxylin and Eosin and analysed for the number of osteoclasts. Pre-revision MRI reports and plasma metal ion concentrations were obtained. The study had ethical (REC for Wales) and health board approval.

Results: Two of the six cases had pre-revision plasma metal ion concentrations greater than recommended (4 ppb). Four of the six cases, including three cases with normal metal ion concentrations, had obvious peri-prosthetic osteclastic activity. Interestingly, the case with the lowest plasma metal ion levels demonstrated the greatest quantity of osteoclasts whilst the case with the highest metal ion levels had the least.

Conclusion: The findings of this pilot study suggest that plasma metal ions levels are not a good indicator of adverse bone reaction to MoM implants. This adds further evidence to the proposition that a more reliable indicator of local tissue reaction to MoM implants needs to be developed.

Winner of Winners – Abstract 6
(From St. Andrews National Surgical Conference)

Improving outcomes for paediatric supracondylar fractures: Completing the cycle

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Background: The gold standard of treatment for displaced supracondylar paediatric fractures is by closed reduction (CR) and percutaneous pinning. However, open reduction (OR) is required if CR fails. There is great controversy regarding the timing of treatment within the literature. A previous audit within Tayside demonstrated OR rates of 31%. Out of hours surgery was found to significantly increase the OR rate. As a result, a series of educational measures were undertaken and if no neurovascular compromise was found on presentation, treatment was delayed until the next available routine trauma list.

Aim: To complete the audit cycle after promoting the issue within the trust.

Method: Retrospective study from 2004-2010 for the original audit (A) and 2011-12 for the re-audit (RA).

Results: 115 patients in the A group and 48 in the RA group were identified. The OR rate was 36/115 (31%) in the A which was significantly reduced to 4/48 (8%) in the RA (p=0.001). 25/115 in A displayed neurovascular compromise compared to 7/48 (15%) in the RA group. In those with no neurovascular deficit, fewer operations were undertaken out-of-hours (from 17% to 7%) often meaning that surgery was undertaken over 6 hours after presentation (from 55% to 82%). There were no increases in adverse outcomes.

Conclusion: Significant improvements in management of supracondylar fractures can be achieved by the audit process. If no neurovascular deficit is found, delaying operative intervention until daylight hours has a lower OR rate and has no increase in complication rates.

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Winner of Winners – Abstract 7
(From National Surgical Conference for Foundation and Student Doctors)

Learning Laparoscopy: A DIY Job?

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Laparoscopic surgery has over the last two decades become a mainstay of conventional practice. Surgeons have rapidly had to learn new skills to stay abreast of such technical advances. Simulators have historically provided a safe environment in which to acquire and improve surgical skill. Various homemade simulators, being vastly more economical than commercial counterparts, have previously been reported. Such equipment promises to aid acquisition of key visual-spatial skills. Personal users, in particular medical students with poor access to expensive training equipment, stand to benefit from these cheaper alternatives.

The aim of this project was to critically review previously described homemade laparoscopic simulators, to construct an improved simulator and to evaluate it as a viable option for surgical education.

Using publically available materials and tools, a laparoscopic simulator was constructed, drawing on the best elements from a number of previously described simulators. Novel additions include the use of a highly mobile high definition camera introduced from an angle that more closely simulates laparoscopic surgery in addition to a separate light element that allows easy manipulation of lighting conditions during tasks.

This project demonstrates a simple and scalable design that offers high quality simulation, at an approximate cost of £60 excluding tools.

All standard laparoscopic training exercises tested on the homemade simulator preformed well, providing a sufficiently challenging visual-spatial task with an overall experience comparable to commercially available simulators.

Winner of Winners – Abstract 8
(From 2nd Aberdeen Surgical Undergraduate Conference)

Correlation of MRI findings with histopathology following radical prostatectomy; an audit

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Background: The aim of this audit was to assess the accuracy of MRI findings in prostate cancer and determine its limitations as a staging investigation. Treatment is guided by differentiating between organ confined disease and extracapsular extension, and determination of both tumour volume and grade. NICE recommends imaging to only be used in men for whom radical treatment is intended, this is preferred for those of assigned intermediate and high risk category.

Methods: Data obtained from a prospectively maintained database of all patients presenting to one consultant surgeon in Ninewells Hospital and Perth Royal Infirmary between 2004 to 2012 with a diagnosis of prostate cancer, who underwent pre-operative MRI scanning. 103 patients presented during this time, patients were excluded if they did not meet the criteria. MRI reports and pathological reports were obtained and cross referenced in order to ascertain the accuracy of the pre-operative MRI report.

Results: 103 patients, 34 excluded, n=69
MRI predicted 63/69 cases as T2 when only 37 cases were T2. In T3 disease; MRI predicted 2/28 cases. MRI failed to detect all T4 (n=3).
Cancer detected 68/69 cases, sensitivity =99%. Staging 35/69 cases correctly, specificity=50%. Of the 34 incorrectly staged, 94% were down staged.

Conclusion: It can be said from the findings that MRI does display a degree of sensitivity in detecting the presence of disease. However in terms of the specificity, from this study MRI has not been shown to detect stage of disease accurately, and underestimated the severity of disease.

Winner of Winners – Abstract 9
(From International Head and Neck Conference)

Beware of the dog: oculofacial reconstruction following paediatric dog bite injury

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Background: Paediatric dog bite injuries are a serious medical and public health issue posing functional, aesthetic and psychosocial consequences. There are 6,450 hospital admissions secondary to dog bite injuries annually in Britain alone. We describe a severe case of paediatric dog bite injury, its management and prevention strategies.

Methods: A 9-year-old boy presented with full thickness upper and lower right eyelid margin tears with involvement of upper lacrimal canal, puncture of upper eyelid, full ptosis of right eye and five lacerations of the face following attack by neighbour's dog. The dog was a fully-grown domesticated Labrador Retriever. The patient was first assessed by a house surgeon on call who administered rabies prophylactic vaccine and thoroughly cleaned and sutured the facial wounds. The patient was then referred for oculoplastic evaluation and underwent reconstructive surgery.

Results: The surgical outcome was good with returning function of the eyelids and an acceptable aesthetic appearance of the eyelids and face. The patient's ptosis fully recovered within four weeks, preventing need for a second surgical procedure.

Conclusions: This case study highlights the necessary steps required for assessment and successful management of eyelid and facial trauma secondary to dog bite. Moreover, paediatric dog attacks are a preventable public health issue. Prevention strategies for paediatric dog bite injuries should include public education and training of dogs and their owners.

Winner of Winners – Abstract 10
(From 2nd Aberdeen Surgical Undergraduate Conference)

To localise and detect incipient damage to the ophthalmic and maxillary branches of the trigeminal nerve during tumour surgery

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Objective: To localise and detect incipient damage to the ophthalmic and maxillary branches of the trigeminal nerve during tumour surgery

Methods: Observational study of patients with skull base, retro-orbital or cavernous sinus tumours warranting dissection towards the cavernous sinus at a University Hospital. Stimuli applied as normal during approach to the cavernous sinus to localise CN III, IV and VI. Recordings were also obtained from the facial muscles to localize VII. The trigeminofacial reflex was sought simply by observing a longer time base routinely.

Results: Clear facial EMG responses seen reproducibly, when stimuli applied to the region of V1, V2 and V3. Response latency was increased compared to direct VII stimuli seen in some cases. Responses gave early warning of approach to these sensory trigeminal branches.

Conclusion: We submit this as a new technique, which may improve the chances of preserving trigeminal sensory branches during surgery in this region.

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Winner of Winners – Abstract 11
(From National Undergraduate & Foundation Surgery Conference)

BAG-1L overexpression promotes a tumour-like phenotype in a three-dimensional model of mammary morphogenesis

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Introduction: BAG-1 is an anti-apoptotic protein comprising three isoforms, BAG-1S, BAG-1M and BAG-1L, all of which are frequently overexpressed in breast cancer. BAG-1L localises in the nucleus and increases transcriptional activity of oestrogen receptors (ER). Nuclear immunoreactivity has been associated with an improved survival in patients with ER+ breast cancer. Overexpression of all BAG-1 isoforms together in three-dimensional (3D) cultures of MCF10A mammary cells gives rise to acini (mammary ducts) that are phenotypically similar to ductal carcinoma *in situ* (DCIS). Here, we investigate the effect of stable overexpression of BAG-1L alone in MCF10A acinar morphogenesis.

Methods: MCF10A mammary cell lines were transfected with BAG-1L or control vectors and cultured as a monolayer or in 3D to form acini. Protein expression was examined by immunoblotting. Acinar morphogenesis was examined by light and confocal microscopy.

Results: Overexpression of BAG-1L attenuates luminal apoptosis, resulting in an increased proportion of acini with filled lumens compared to control ($p<0.0001$) - a phenotype observed in DCIS. These acini also exhibit disorganised, atypical gross morphology, and form more atypical structures than do control cultures ($P<0.0001$). Immunoblot analysis shows a loss of E-cadherin expression in the MCF10As expressing BAG-1L at high levels, a feature commonly observed in invasive lobular breast cancer.

Conclusion: Overexpression of BAG-1L in acini results in the formation of structures resembling a tumorigenic phenotype, and reinforces a role of BAG-1L as a contributor to the malignant process in the breast. Experiments investigating the effect of treatment with BAG-1-specific inhibitors in this model are currently underway.

Winner of Winners – Abstract 12
(From International Head and Neck Conference)

An Audit on Surgical Intercostal Drain Removal Technique and the Development of Residual Space

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Aims: Residual air space is a complication following discontinuation of intercostal drains. The aims of our audit were to quantify the relapse rates of pneumothoraces post surgical intercostal drain removal, and investigate potential risk factors for relapses against local guidelines. A re-audit was conducted following our recommendations, to evaluate its outcome.

Methods: Prospective data was collected for all surgical intercostal drains removed during a month period for both audits. Chest x-rays performed before and after drain removal were reviewed for increased residual air space. We excluded patients with ongoing intercostal drains in-situ, post-pneumonectomy, and intercostal drainage for haemo/chylothoraces and pleural effusions.

Results: A total of 44 patients were included. The initial relapse rate of pneumothoraces post intercostal drain removal was 28% despite 100% compliance to the local guidelines, with which intercostal drains were removed on held-inspiration. The re-audit, after recommending chest drain removal on held-expiration, relapse rate dropped to 4.3% (p=0.0497). No patients required drain re-insertion. The following risk factors were found not to affect outcome: type of surgery, extra suture requirement post-drain removal, timing of drain removal, grade of staff involved and patient demographics.

Conclusions: There is no consensus on whether surgical intercostal drains should be removed on held-inspiration or held-expiration. Our relapse rate of residual air space post intercostal drain removal has significantly reduced from 28% to 4.3% after changing our method of intercostal drain removal from held-inspiration to held-expiration. Further re-audits will be carried out ensuring standards are maintained.

Winner of Winners – Abstract 13
(From International Head and Neck Conference)

The Reporting Quality of Randomised Controlled Trials in Ophthalmic Surgery

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Background: Randomised controlled trials (RCT) are regarded as the gold standard for evaluating the effectiveness of therapeutic interventions. RCTs in ophthalmic surgery pose particular challenges in study design and implementation. Therefore accurate, transparent and complete reporting is especially important for readers. The CONSORT statement guides the reporting of RCTs.

Purpose: To provide the first known assessment of the compliance of RCTs in ophthalmic surgery to the CONSORT extension for trials involving Non-Pharmacological Intervention (CONSORT NPT). We also compared compliance against surrogate markers of paper quality.

Methods: The Medline database was searched for RCTs in ophthalmic surgery from 1/1/2011 to 31/12/2011. Results were searched independently by two authors and relevant papers selected. The RCTs were independently scored against the 23-item CONSORT NPT checklist. Discrepancies were resolved by consensus. Surrogate markers of paper quality were compared against the CONSORT score using the Spearman rank correlation coefficient.

Results: 186 papers were retrieved from Medline. 65 papers, involving 5803 patients, met the inclusion criteria. The mean CONSORT score was 8.9 (39%) out of 23 items (range 3.0-14.7, SD 2.49). The least reported items related to title and abstract (1.6%), reporting intervention adherence (3.1%) and interpretation of results (4.7%). There was no significant difference between CONSORT score and journal impact factor (R=0.14, p=0.29), or number of authors (R=0.14, p=0.93).

Conclusion: The reporting of RCTs in ophthalmic surgery is suboptimal. There is a need to improve reporting quality by working with authors, journals, editors as well as guideline-developers.

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Winner of Winners – Abstract 14
(From National Medical Student Conference (KARMIC), Kolkata, India)

Role of Immunophenotyping in the diagnosis of acute leukemias of ambiguous lineage – a new entity described by WHO 2008.

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Introduction: Biphenotypic Ambiguous Leukemia represents < 5% cases of Acute Leukemia. Knowledge about BAL is *limited* in terms of clinical and biological presentation and with regard to outcome. More importantly, prognosis is poor compared with de novo AL. This study aims to analyze immunophenotypic profile of Acute Leukemias of ambiguous lineage and to study the prevalence in Indian scenario.

Materials and methods: Flow cytometric immunophenotyping (FCI) was performed on fresh bone marrow or blood specimens. Single-cell suspensions were incubated with combinations of monoclonal antibodies in four-color immunofluorescence. The antibodies were conjugated to fluorescein isothiocynate (FITC), phycoerythrin (PE), peridinin chlorophyll protein complex (PerCP) and allophycocyanin (APC). Antibodies used in the analysis recognized stem cell and panleukocyte antigens including CD45. Samples were analyzed using 4 color flow cytometry and the blast cell populations were identified by CD45 versus side scatter properties using standard staining and analytical methods.

Results: Out of 30 cases of Acute Leukemia in 4 months we report 04 cases diagnosed as AML or ALL based on FAB (13.3%). However, on FCI these were diagnosed as BAL, Bilineage AL & ALL with aberrant myeloid expression.

Conclusion: Unlike commonly seen acute leukemia classified as B or T lymphoid or myeloid lineage, BAL is a type of acute leukemia with *uncommon biological and clinical features.* Limited studies are available for Indian population in this regard and hence at least, patients who are not responding well should be screened for ambiguous lineage using comprehensive FCI and molecular studies.

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