

(115[50.3] mg vs 176.5[103.2] mg,  $p < 0.01$ ). There was no difference in any of the other outcome measures.

**Conclusion:** Intraoperative infiltration gives superior pain relief over the first 24 hours following primary TKR, compared to single shot femoral nerve block. Furthermore, it is also superior in minimising postoperative opiate use.

**ASIT MEDICAL STUDENT PRIZE: 0761: THE EFFECT OF LATERALITY ON SURGICAL ABILITY AND A COMPARISON OF LAPAROSCOPIC SIMULATOR ABILITY WITH THE VALIDATED RAF FLYING APTITUDE TEST**

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**Aims:** Laterality should not be thought of as simply as right or left handed, but as a scale from single hand dominant to ambidextrous. There is currently no aptitude test for surgical selection. This study used the validated RAF flying aptitude test, and a measure of laterality, to see if they correlated to simulator performance.

**Methods:** 23 junior doctors completed a questionnaire to give a measure of laterality, which was compared to performance on 4 laparoscopic box trainer tasks. 13 junior doctors who had completed the RAF flying aptitude test performed 2 tasks on a virtual reality laparoscopy simulator.

**Results:** The laterality quotient showed a significant quadratic relationship to total time on the box trainer ( $p = 0.006$ ), the R square value showing that 30% of the result could be accounted for by laterality. The flying aptitude test showed a significant relationship ( $p = 0.01$ ) with total time to complete the tasks on the simulator.

**Conclusions:** The people who were more ambidextrous completed the tasks faster, whereas those who preferred one hand were slower, a method of teaching trainees to become more ambidextrous would help to improve performance. The aptitude test was able to predict those who would perform fastest on the simulator.

**ASIT MEDICAL STUDENT PRIZE: 1092: AN AFFORDABLE, OBJECTIVE PERI-OPERATIVE ASSESSMENT TOOL FOR KNEE ARTHROPLASTY**

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**Introduction:** Indications for total knee arthroplasty (tka) are largely based on subjective patient data. The post-operative period lacks personalised rehabilitation strategies and active follow-up, resulting in sub-optimal patient outcomes. We investigated the feasibility of using a low-cost, ear-worn accelerometer (e-ar, imperial college london) to conduct objective, home-based mobility assessments in the peri-operative setting.

**Methods:** Fourteen patients on the waiting list for tka, and 15 healthy subjects, were recruited. Pre-operatively, and at 1, 3, 6, 12 and 24 weeks post-operatively, subjects completed a short-form health survey (sf-36), a series of activities of daily living (adl), and underwent knee examination. During the adl, objective motion data was collected using an ear-worn sensor. Features extracted from sensor data were embedded in manifold space to assess patient performance.

**Results:** Using sensor data, subjects were correctly classified into their peri-operative stage with 89% accuracy. Calculation of average class differences from the healthy group cluster allowed functional recovery of individual subjects to be profiled, including the detection of complications.

**Conclusions:** We demonstrate a resource-sparing, objective method of assessing mobility in the community setting. This could be used to refine surgical indications, and facilitate regular, remote follow-up, with the potential to improve the quality of service.

**ASIT MEDICAL STUDENT PRIZE: 1483: THE REGENERATIVE POTENTIAL OF FULLY-DEGUMMED SILK CONDUITS IN PERIPHERAL NERVE INJURY REPAIR COMPARED TO THE CURRENT 'GOLD STANDARD' OF AUTOLOGOUS GRAFT REPAIR**

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**Introduction:** Peripheral nerve injury is a major cause of morbidity. The 'gold standard' to treat such injuries is autologous graft repair. This method risks painful neuroma formation and the incomplete recovery of the resected nerve. Alternative repair strategies do exist with variable degrees

of success. Therefore, a novel fully-degummed 'silk worm' fibroin based Spiderex® nerve tube has been developed.

**Methods:** 12 female Sprague-Dawley rats, Surgical excision of grafts after 8 weeks, Tissue processing, Immuno-histochemistry, Confocal microscopy and Quantitative analysis.

**Results:** Axonal regeneration using the Spiderex® tube, in the mid-graft section was comparable to that in the autologous graft ( $p > 0.05$ ) mid-section with greater regeneration in the distal-section of the nerve ( $p < 0.01$ ). Overall Schwann cell support was greater in the Spiderex® nerve tube ( $p < 0.05$ ) as compared to the autologous graft. Macrophage responses were similar at the distal-ends in both the Spiderex® tube and autologous graft treated nerves ( $p > 0.05$ ) but higher at the Spiderex® tube, at mid-graft level compared to the autologous graft mid-section ( $p < 0.05$ ).

**Conclusion:** The novel Spiderex® silk conduit is a suitable alternative for clinical use. Sacrificing animals beyond 8 weeks may demonstrate superior nerve regenerative potential of Spiderex® tubes. Translation to functional recovery will be explored further in future studies.

**SARS ACADEMIC AND RESEARCH PRIZE: 0073: SARS/ASIT ACADEMIC & RESEARCH SURGERY PRIZE WINNER: AN IN VIVO STUDY OF BIOACTIVE MULTILAYERED SCAFFOLDS FOR REGENERATION AND REPAIR OF OSTEOCHONDRAL DEFECTS**

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**Aim:** This study aims to assess the regenerative capacity of ChondroColl (WO2010/084481) in a large animal model. ChondroColl is a novel multilayered scaffold developed in our lab to treat osteochondral defects in the knee joint.

**Method:** In vivo assessment was carried out by creating a bilateral 6mmx6mm defect in the medial femoral and lateral trochlear ridge per joint of a caprine model. Both defects in one joint were implanted with ChondroColl, while the defects in the other joint were left empty, acting as controls. Initially in a 6 week pilot study was carried out. This was followed by a long term study at 3months, 6months and 1year. The repair was assessed by micro CT analysis and histological staining of the samples.

**Results:** The 6 week and 3 month study showed good scaffold retention and repair of subchondral bone and generation of hyaline like cartilage. The 6month and 1 year study are ongoing.

**Conclusion:** Positive results to date show that ChondroColl to be a promising method for cartilage repair and regeneration. It negates the need for other biological agents such as genes, stem cells and growth factors by stimulating the native tissues repair mechanism from the surrounding bone and cartilage.

**SARS ACADEMIC AND RESEARCH PRIZE: 0617: BLOCKING EXPRESSION OF THE TUMOUR SUPPRESSOR GENE, P63 INHIBITS IN-VIVO CARCINOGENESIS IN PROSTATE CANCER**

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**Introduction:** Tumour protein p63 is a member of the p53 family of transcription factors. In normal prostate, p63 is expressed solely in the basal epithelial cells and has been associated with both gland development.

**Methods:** Using a short hairpin RNA (shRNA) system, p63 expression was knocked down in PC3 cells to obtain stable PC3 TP63- cells clones. Elimination of p63 expression was measured by qRT-PCR. To test the effects on tumour induction, two groups of immuno-compromised male mice (six weeks old,  $n = 10$ ) were injected subcutaneously into both flanks with increasing numbers (range 15-1.5x10<sup>5</sup>) of PC3 TP63 or PC3-2V cells (expressing a non-functional, scrambled ShRNA).

**Results:** PC3 TP63-cells were viable but had a greatly reduced lifespan in vitro. The PC3 TP63- injected mice only developed tumours after a significant delay compared to the PC3-2V group which formed tumours at the same rate as untransfected PC3 cells (around 21 days).

**Conclusions:** Knock down of p63 expression confirmed that a minor proportion of basal cells in PC3 possess the tumour initiation capacity.