Method: Paired 4mm punch biopsies were taken at the wound edge and wound bed in patients undergoing SSG and EG. The biopsies were taken before treatment and one week after treatment. Tissues were sectioned and stained for H&E and immunohistochemistry for gap junctional proteins and analysed using confocal microscope.
Result: Downregulation of the gap junctional proteins were seen with different intensity between the groups ($p<0.05$), suggesting different healing mechanism between the two treatment groups. The massive downregulation in the EG group suggests that it initiates keratinocyte migration from wound edge and activates wound edge keratinocytes into a remodelling state of wound healing. The wound bed biopsies revealed increased inflammation after EG in both acute and chronic wounds, suggesting the activation of the wound bed.
Conclusion: We describe the difference in the cellular mechanism of healing and EG is a promising alternative to the more invasive conventional surgical techniques as it is less invasive and reduces the surgical burden for patients in need of wound coverage.

0742: PROSTATE CANCER PROGRESSION: ASPIRIN INDUCES TOXICITY IN PROSTATE CANCER CELL

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Introduction: Aspirin has shown a great promise in the management of cancer. Evidence from colorectal cancer studies suggests that the anti-tumor properties of aspirin are due to the direct inhibition of cyclo-oxygenase-2 (COX-2) activity. Such evidence are lacking in prostate cancer. In our previous study, we reported that prostate cancer cell express high levels of COX-2. Therefore, we evaluated the role of aspirin in prostate cancer progression.
Aim: To assess the toxicity of aspirin and it active metabolite, sodium salicylate in prostate cell.
Method: We exposed PNT2 (normal prostate), DU145 (prostatic brain metastasis), PC3 (prostatic bone metastasis) to six physiologically relevant doses (0- 10mM) of aspirin and sodium salicylate. Relative population doubling (RPD) was applied to provide a quantitative measure of cell growth, death and cytostasis.
Result: We observed that sodium salicylate was most potent in PC-3 cells, the most aggressive cell line and least potent in PNT2 (normal prostate cell). LC_{50} values were 8.5mM, 9.2mM and 13.2mM for PC3, DU145 and PNT2 respectively.
With aspirin, prostatic cancer cell lines (PC-3, DU-145) showed highly significant toxicity response compared to normal prostate cell (PNT2) from 6mM ($p<0.0001$).
Conclusion: This study provides evidence that aspirin has a role in prostate cancer progression.

0939: IDENTIFYING A SUITABLE BRUCH'S MEMBRANE FOR TRANSPLANTATION IN AGE RELATED MACULAR DEGENERATION

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Abstract: Age related Macular Degeneration (AMD) is the leading cause of irreversible visual loss in developed countries. There are few treatment options available for the disease, often with unsatisfactory results. Retinal pigment epithelium (RPE) and Bruch's Membrane (BM) replacement have been stipulated as a possible treatment option.
Aim: To identify a prosthetic BM (porous and suitable for cell culture) which could be used in future transplantations.
Method: To investigate the effect of dextran solutions of different molecular weights (RD4, FD 70 and RD155) on a number a membranes (Expanded polytetrafluoroethylene (ePTFE), Ammonia (NH3) treated ePTFE, Hyaluronic acid (HA) treated ePTFE, Polyurethane (PU), Polyester (PET)) over a 24 hour period, with and without cultured aRPE-19 cells. After 24 hours the aRPE-19 cells were fixed and stained to assess cytoskeletal morphology and identify cell numbers.
Result: Overall the PU performed worse followed by PET, the ePTFE membrane and its treated forms allowed the largest amount of dextran through irrespective of their molecular size. With all membranes dextran penetration was lower with aRPE19cells however this was not found to be statistically significant.
Conclusion: Treated ePTFE membranes may be a promising candidate for transplantation in those with AMD.

0186: DEVELOPMENT OF A NOVEL BIOREACTOR TO MIMIC THE EFFECTS OF BENDING DURING LIMB DEVELOPMENT

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Aim: The objective of this study was to develop a bioreactor that could mimic the bending loading applied to developing limbs, and determine what effect such bending stimulation has on chondrogenesis and endochondral differentiation of mesenchymal stem cells (MSCs).
Method: A two-part bioreactor that could apply controlled bending forces was designed and manufactured. Porcine MSCs were encapsulated in agarose hydrogels. Intermittent bending through 4.2 degrees at a rate of 1 degree/second was applied to the MSC laden hydrogels for 2 hours/day for 21 days following 7 days of free swelling culture. Both bended and free swelling constructs were exposed to chondrogenically primed media. Samples were analysed for collagen, sulphated glycosaminoglycan (sGAG), and calcium deposition.
Result: There was significantly greater Ca2+ deposition in bended constructs compared to free swelling controls ($p<0.05$). In contrast, sGAG synthesis was significantly inhibited in bended constructs ($p<0.01$).
Conclusion: The application of bending to MSCs embedded in agarose hydrogels supressed chondrogenesis, but stimulated progression towards a hypertrophic phenotype and accelerated ossification of the engineered tissue. Bioreactor systems are providing greater insight into the role of mechanical cues in regulating bone and joint development; ultimately enhancing the development of novel tissue engineering and regenerative medicine therapies in the field of orthopaedic medicine.

0881: COMPARING THE PLASMA AND URINE OF UNTREATED, POST-MENOPAUSAL, FEMALE BREAST CANCER PATIENTS TO THOSE OF NORMAL CONTROLS, USING 1H-NMR-BASED METABONOMICS

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Introduction: Breast carcinogenesis involves numerous complex metabolic processes. To date, few NMR-based metabonomic studies attempted to investigate breast cancer, by analyzing the metabolic profile of human biofluids.
Method: Plasma and urine samples from 41 untreated post-menopausal breast cancer patients, and 30 controls, were collected and analysed by ^{1}H-NMR spectroscopy. Their spectral profiles were subjected to Principal Component Analysis (PCA) and Partial Least Squares Discriminant Analysis (PLS-DA) for multivariate statistics.
Result: By applying PLS-DA on plasma samples, it was possible to distinguish between patients who had lymphovascular invasion and involved lymph nodes, and those who did not. The metabolites contributing most, included those of choline-phospholipid pathway, acetate, alanine, creatinine, lactate, and valine. By applying the same analysis on urine samples, it was possible to distinguish between those who had invasive breast carcinoma, lymphovascular invasion, involved lymph nodes, positive