

SSSR ABSTRACTS 2011

XVII Congress of the Spanish Society of Surgical Research took place this year on 27–28 October in Oviedo, Spain

Oral Presentations

1- Methylation status of genes for the early detection of neoplasia in high risk inflammatory bowel disease patients

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Aim: To analyze the methylation status of selected genes as a risk marker for CRC in IBD patients.

Methods: We evaluated methylation status of *TGFB2*, *SLIT2*, *HST3ST2* and *TMEFF2* in biopsies of: 60 patients with sporadic-CRC, 32 patients with IBD-associated neoplasia, 85 patients with IBD-without associated neoplasia and 28 healthy controls. Methylation was also assessed in stool DNA from 60 IBD patients without-neoplasia.

Results: Methylation was a common phenomenon (78% in tumor and 49% in adjacent non neoplastic mucosa) in IBD-associated neoplasia. Methylation was more frequently detected in the mucosa of IBD patients at high risk (15/20) than patients at low risk (32/63) ($p=0.05$ and $p=0.03$, respectively). In stools *SLIT2* gene methylation was more frequently methylated in the group of patients at high risk (4/16) compared to low risk (0/37) ($p=0.006$).

Conclusions: Analysis of methylation markers may be used in the early diagnosis of CRC in high risk IBD patients.

2- Experimental development of a bifurcated, self-expanding, single-piece stent and suitable transporter device for single-access percutaneous implantation

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Objective: Treatment of injuries affecting vessel bifurcations requires complicated angioplasty maneuvers or multiple stent placements to cover the branches adequately. Biliary and bronchial carcinomas frequently spread to bifurcations, complicating treatment by stenting. We have developed self-expanding bifurcated stent prototypes and their respective carrier-releasing device, optimal for these specific cases.

Method: Prototypes were built by manual binding of self-expanding, monotubular stents, forming a single Y-structure. A carrier-releasing device was built from conventional catheters and introducers, allowing independent release of stent branches and body in chosen anatomical bifurcations. Prototypes were tested for *in vitro* release and placement in swine anatomical bifurcations.

Results: 42 prototypes were composed, loaded and released successfully. No statistical differences in access or release difficulty were found between models.

However, braided nitinol stent, closed cell with attached-traumatic ends has allowed easier procedures overall.

Conclusion: A functional truly bifurcated stent was composed, which allows access to different anatomical bifurcations with a single percutaneous puncture.

3- Myoblast transplantation and hepatocyte serial transplantation in an experimental model of absence of LDL receptors. A further step in the clinical implementation of cell therapy

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Introduction: Some patients could benefit from transplant of several cell types, among them bearers of familial hypercholesterolemia due to absence of LDL receptors.

Aim: Study of hepatocyte/myoblast transplantation, to approach absence of LDL receptors.

Methods: Watanabe rabbits, suffering familial hypercholesterolemia, are recipients, and healthy NZW rabbits, donors. Hepatocytes and myoblasts are transplanted in the same recipient, into spleen and left ventricle respectively. Group I, one transplant of hepatocytes and one of myoblast; Group II, two transplants of hepatocytes and one of myoblasts. The following parameters are determined: ALT, AST, LDH, total cholesterol, HDL, LDL, triglycerides, total-CK, MB-CK, troponin-I, lactate and apoB100. Histological and immunohistochemical studies are performed.

Results: Parameters reflecting cholesterol metabolism decrease post-transplantation in both groups. Markers of myocardial injury do not change significantly. LDL receptor-positive cells and myoblasts are detected.

Conclusions: Double cell transplant is a potential therapy and may help to solve problems related to cell therapies.

4- Experimental study comparing barbed suture and conventional suture

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Introduction: The evolution of sutures is actually looking for a better elasticity and dynamics and avoiding high tension, excessive knots, traumatic methods, bacterial colonization and poor integration.

Objective: Check the effectiveness of barbed sutures in the abdominal wall closure in rats.

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Material and methods: Underwent midline laparotomy and closure with suture 50 Wistar rats divided into: conventional suture, bi-directional barbed suture beardless central(A), with unidirectional barbs(B), bidirectional suture with barbs(C), suture loop(D). At 15 days, were tested the tension making a pneumoperitoneum and the traction with a dynamometry of the explant of the abdominal wall

Results: A: 2 failures to the tension. B: 3 positive traction test. C: 2 failures to tension and 2 failures to traction. D: one tensile failure.

Conclusions: The suture with barbs is a good choice for closure of tissues with low tension, keeping in mind that the central zone is a point of weakness. The incorporation of a loop and the shortest distance between the barbs get better coaptation of the edges.

5- Minimally invasive video assisted parathyroidectomy (MIVAP). Review of 35 cases

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Introduction: Minimally Invasive Video Assisted Parathyroidectomy (MIVAP), is a novel technique that allow the surgical treatment of patients with primary hyperparathyroidism when the studies of localization detect a probable parathyroid adenoma. The advantages of this technique are better visualization of the recurrent nerve, decreased postoperative pain, shorter operating time and improved cosmetics. We present the results of MIVAP in 35 patients with primary hyperparathyroidism since 2007.

Results: The mean operation time was 45 minutes. All patients cured after the surgery. Three patients (9%) require conversion to cervicotomy (One because an ectopic intrathyroid adenoma, one because an excessive subcutaneous adiposity and one because a big adenoma that could not be extracted by the incision). No patients developed a major complication. Three of the patients develop a transient vocal fold paralysis.

Conclusions: MIVAP is a safe, quick, effective and feasible technique that allows the surgical treatment of patients with primary hyperparathyroidism.

6- Transplantation of adipose derived stem cells (ADSCs) and olfactory ensheathing cells (OECs) cultured in a new scaffold for the repair of spinal cord injury (SCI) in rats

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Recent advances in SCI research and in cell culture techniques and biomaterials predict promising new treatments for patients with SCI. This study was designed to assess axon regeneration and locomotor recovery in rats with spinal cord injury treated with a novel serum-derived albumin scaffold seeded with ADSCs and OECs. Rats treated with scaffold plus cells after 90 days-post-injury, showed an improvement in locomotor skills in compared to control injured untreated animals. Astrocytic scars and tissue regeneration revealed that although the scaffold itself appeared to play a significant role in reducing glial scar formation and filling of the lesion cavity with cells, the presence of ADSCs and OECs in the scaffold led to the appearance of cells expressing markers of neurons and axons at the injury site. According to our results, the scaffold seeded with ADSCs and OECs seems to be a suitable candidate for its application in SCI repair studies.

7- Culture of mandibular human osteoblasts on a novel albumin scaffold : *in vitro* and *in vivo* evaluation

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Objective: 1. To develop a novel serum-derived scaffold. 2. To obtain and culture human mandibular osteoblasts seeded in a novel human serum-derived scaffold. 3. Evaluate mineralization *in vitro* and *in vivo*.

Method: Human mandibular osteoblasts were cultured in experimental scaffold for *in vitro* evaluation. Otherwise, cell-scaffold constructs were implanted into the subcutaneous space of immunodeficient mice. Critical mandibular defects were created in nude rats and received the construct.

Results: Histological evaluation revealed a bone-like matrix *in vitro*, confirmed by histomorphometric analysis. Mineralization was revealed by von Kossa staining in mice. CT images showed bone regeneration of the mandibles after 5 weeks. There was progressive mineralization throughout that was proved with von Kossa at 5, 8 and 11 weeks.

Conclusions: This study revealed that osteoblasts were able to synthesize a bone-like extracellular matrix seeded in a new human serum-derived scaffold *in vitro* and *in vivo*.

8- Anastomotic leaks in open and laparoscopic colorectal surgery

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Background: We analysed the management and outcome of anastomotic leaks in open and laparoscopic elective colorectal surgery.

Method: Data of 856 patients with open and 398 patients with laparoscopic colorectal anastomosis were retrospectively collected, classifying anastomotic leaks as contained (fistula) and dehiscence.

Results: The incidence of anastomotic leaks was 34(4%) in open surgery and 24(6%) in laparoscopy. Laparoscopic fistulas were treated conservatory in 8(73%) cases, compared to open surgery, 8(47%) (p= 0,050). Twentyfive (73,5%) open anastomotic leaks and 16(66-6%) laparoscopic ones needed surgical treatment: diverting stoma or reanastomosis. Reanastomosis was used in the repair of 35% of the dehiscences in open surgery and of 53% of fistulas in laparoscopy (p= 0,050). The morbidity associated was 23, 6% in open approach and 31% in laparoscopic one (p=0, 3) and the mortality, 14, 7% and 12, 5%, respectively.

Conclusion: Anastomotic leaks have similar incidence and complications in both surgeries, being conservatory treatment of election for laparoscopic fistulas.

9- Postoperative pain control protocol in the arthroplasty with fascia lata graft (AFG) avoids hospitalization

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Introduction: Rizarthrosis, a degenerative alteration of the trapeziometacarpal joint, is the principal cause of pain and limitation of thumb mobility in adults, frequent in women between 50 and 60 and with a prevalence of 10 to 1 with regard to men.

Objective: Evaluate whether the application of a specific postoperative pain control protocol is useful to achieve acceptable levels of comfort in outpatients operated of AFG.

Method: Nine women were operated of AFG from June 08-December 10 in the Outpatient Surgery Unit. A postoperative pain control protocol and telephonic tracking were performed.

Results: Nine rizarthrosis interventions were realized in women between 50–64 years of age, 8 presented a NS < 4, 1 patient was hospitalized because of severe pain 48 hours after surgery.

Conclusions: AFG with an adequate postoperative pain control can be accomplished ambulatorily, achieving optimum comfort levels which avoids hospitalization.

10- Statistic analysis of sentinel lymph node biopsy technique in cutaneous malignant melanoma in The Central University Hospital of Asturias (2004–2010)

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The aim of this study is to identify which histologic characteristics of malignant melanoma and which clinical characteristics of the patient are associated significantly with having a sentinel lymph node biopsy (SLNB) and with recurrent disease. The authors reviewed retrospectively 67 consecutive patients who underwent SLN biopsy between 2004 and 2010. Average Breslow thickness was 2,37 mm. Fifteen melanomas (22,4%) had an histologically positive sentinel lymph node biopsy result. Univariate analysis identified increasing Breslow thickness and increasing Clark level as significant for having SLN metastases. Multivariate analysis identified Breslow thickness as significant. Increasing Breslow thickness and having lymph node metastases were associated significantly with having a recurrence. In conclusion, some characteristics of the patient and the tumor are associated with a greater likelihood of having a positive SLN or a recurrence. This must be taken into account in order to decide which patients with melanoma may require SLN biopsy.

11- Perioperative Chemotherapy in resectable gastroesophageal adenocarcinoma: Pathological response and tolerance

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Background: Effectiveness of neoadjuvant chemotherapy was proven in MAGIC phase III study.

Methods: We included patients with resectable stomach, GEJ or lower esophagus (T3-4 or N+) cancer receiving 3 pre and 3 postoperative cycles of Docetaxel 70 mg/m² day 1, Cisplatin 70 mg/m² day 1 and Capecitabine 1500 mg/m²/ day 14 days, q21 days.

Results: 29 patients were treated. Median age: 55 years. KPS: 80%. Site: 17 stomach/8 GEJ/4 esophagus. Clinical stage: 2 (II)/12 (III)/15 (IIIB). Surgery was curative in 90%. Surgery characteristics (table 1 and 2). 7% complete pathological responses, 52% downstaging and 34% stable diseases. Time to progression and overall survival were 12 and 15 months, respectively. Severe toxicity: vomiting (40%), neutropenia (27%), diarrhea (19%), skin effects (8%) and toxicity-related hospitalizations: 27%. There were 2 deaths within 10 days after surgery.

Conclusions: Modified DCX seems to be tolerable, feasible and efficient but this finding needs to be validated in a clinical trial.

12- Mutations in TGFB2 and bicuspid aortic valves

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Introduction: Bicuspid aortic valve (BAV) is a congenital anomaly of great importance, for its prevalence and association with early aortic disease. This is still an incompletely understood entity in terms of their genetic predisposition and pathogenesis.

Objective and methods: We have analysed by sequencing the exon 4 in the transforming growth factor beta receptor type 2 (TGFB2) gene, in 80 patients with BAV and in 67 patients with tricuspid aortic valve (TAV).

Results and conclusions: We found two genetic variants in BAV group: Asn389Asn (previously described) and Phe164Leu (in a patient with aneurysm). In TAV group we found three variants: Asp157Glu, His328His (new variants) and Asn389Asn; all in patients with severe stenosis. This supports genetic predisposition in BAV and in the development of aortic valve pathology in patients with normal TAV. Further studies will confirm whether the variation in this gene may be associated with increased susceptibility to aortic disease.

13- Height of monitor and operating table in laparoscopic surgery: influence on surgeon's muscular activity and postural behavior

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Introduction: We aimed to determine surgeons' preferences regarding regulation of operating table and monitor dependent on surgical previous experience level, and analyse how these influence postural behaviour and muscular activity.

Method: 30 surgeons were evaluated and divided according to previous surgical experience. All participants were initially asked to regulate the height of monitor and surgical table in accordance with personal criteria. Postural behaviour was recorded by two digital video cameras, and electromyography was performed on arm and back to determine muscle activity.

Results: Results show that expert surgeons place the operating table and monitor in a significantly lower height than novice surgeons. Novice showed a higher degree of incorrect postures and higher levels of muscle activity.

Conclusions: Novice surgeons place both monitor and operating table at a higher level than expert surgeons. This correlates with a higher number of postural errors and level of activity in back and forearm muscles.

14- Differences among patients with palliative resected tumor or not in metastatic colorectal cancer

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Introduction: The role of palliative surgery is unknown in metastatic colorectal cancer (MCCR) so we analyzed its impact on response to chemotherapy, time to progression (TP) and survival.

Patients and Methods: Patients with MCCR who received at least 2 lines of polychemotherapy were evaluated.

Results: 138 patients enrolled.

There were no differences on response (38.83% vs 40%) nor on TP (11.86 vs 9.66 months, p=0.10) to 1st line concerning operated or not. Response (18.45%

vs 8.57%) and TP (5.33 vs 3.52 months, $p=0.0046$) to 2nd line were higher in resected patients.

Survival among intervened and not was 25.98 and 18.33 months ($p=0.0072$).

Conclusions: We found a statistically significant benefit for surgery in TP and survival for 2nd line but it can not be excluded that factors predicting worse outcomes have selected patients with poor prognosis in non-surgical arm.

15- Analysis of mortality and complications associated with use of intraaortic balloon pump on cardiac surgery

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Background: Intraaortic balloon pump (IABP) is the most usable tool of temporary mechanical circulatory support for cardiac surgical patients.

Material and Results: We analyzed 57 consecutive patients (36.8% female mean age 66.2 ± 13.6 years) who underwent cardiac surgery and required IABP support over a two year period. The following clinical features were presented: hypertension (70.2%), diabetes mellitus (28.1%), chronic renal failure (15.8%) and poor left ventricular function (21.1%). The incidence of complications was high, 40.4%, being thrombocytopenia (24.6%) and limb ischemia (7%) the most frequent. Overall mortality was 33.3% and half of the sample had the device implanted more than ninety hours. Univariate analysis showed a statistically significant association between increased duration of counterpulsation and the appearance of complications ($P=0.017$).

Conclusion: According to our results and the evidence reported in the literature, IABP should be withdrawn as soon as possible to minimize the risk of potentially fatal complications.

16- Comparative experimental study of the use of intraluminal CO₂ in enteroscopy

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Introduction: This study has been designed to compare the effects of the enteroscopy with room air versus CO₂ insufflations.

Material and methods: 20 swine were used. A enteroscopy of 90 minutes was performed, with the employment of room air (Group I) and CO₂ insufflations (Group II). The evaluated parameters were: blood pH, paCO₂, HCO₃⁻, cardiac output, mean arterial pressure, SpO₂, cardiac frequency, mean pressure of the airway. Measurements were made at: T₀-baseline, T₁-30 minutes, T₂-60 minutes, T₃-90 minutes. The depth of bowel intubation and the abdominal distension were valued.

Results: The intubation depth was 267 ± 27 cm (Group I) and 360 ± 34 cm (Group II). The hemodynamic and ventilatory parameters didn't show significant differences. The group I showed a great abdominal dilatation after 3 hours of exploration.

Conclusions: CO₂ insufflation was shown as a safe technique. CO₂ insufflations allow a major depth of bowel intubation. Abdominal distention decreases more rapidly with CO₂ insufflation.

17- Experimental evaluation of a new design of covered metal stent for the tracheal trauma treatment

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Introduction: The aim of this study was to evaluate a new design of temporal covered metallic stent tracheal trauma treatment.

Material and methods: 8 rabbits were used. The tracheal trauma model consisted in the incision of the tracheal diameter. Subsequently, the treatment was performed by the insertion of a covered nitinol stent in which, its ends were modified with PTFE section. Follow-up 2 months. Hemodynamic and ventilatory parameters were evaluated before the trauma (Phase I), during the trauma (Phase II) and after the stent insertion (Phase III).

Results: In the follow-up the animals experimented a trauma tracheal resolution without respiratory disorders, subcutaneous emphysema, hyperplasic growth or stent migration.

Conclusions: The new design of covered metal stent has resolved the tracheal trauma. This could allow a more conservative approach of the airway, although it should be noted that follow-up time is short and the group size is small.

18- Daily manual activities. Do they contribute to greater skills in the laparoscopic simulator?

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Introduction: Some studies have shown that the practice of certain non surgical activities may predispose an acquisition of surgical skills in virtual simulators.

Objective: To assess the influence of certain activities of the medical student's ability to perform exercises in simulators.

Material and Methods: We evaluated the time required to perform two exercises, in the physical and virtual simulators, in 20 students of Medicine.

Results: The average time employed for mobilization of objects was 337.05 seconds and for grasping in LapSim was 47.38 seconds. The group that use console makes the mobilization and grasping exercises, faster than those not using console 270.33 vs 365.64 and 43.57 vs 49.01 respectively. Drive, play instruments and make crafts, decreases the time in both exercises, with no statistically significant differences.

Conclusion: Everyday manual activities reduce the time spent on exercises in the physical and virtual simulator of laparoscopy, although there were no statistically significant differences.

19- Use of adult bone marrow mononuclear cells in patients with long bone nonunion

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Introduction: Pseudoarthrosis affecting the long bones of the limbs is a major orthopedic concern.

Objective: Evaluate efficacy using autologous adult bone marrow mononuclear cells (BM-MNCs) in patients with long bone nonunion.

Method: On the day of surgery bone marrow were aspirated from the iliac crest and BM-MNCs separated, enumerated, filtered and then resuspended to obtain a final infusion volume of 10 ml. At the surgery room the cell preparation was immediately applied to the allograft used to repair the bone defect, within the standard bone fixation and bone allograft procedure indicated in each case.

Results: We describe the cases of seven patients with pseudoarthrosis of long bones treated with BM-MNCs, with complete bone healing.

Conclusion: The combined use of an optimal stabilization system and autologous BM-MNCs from an iliac crest aspirate could be a good therapeutic strategy to optimize bone healing and diminish complications in the repair of nonunions.

20- CT – Colonography after incomplete colonoscopy

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Background: Virtual colonoscopy (VC) has become a diagnostic alternative tool in patients with incomplete colonoscopy for the complete examination of the colon.

Objective: To complete colonic examination in patients with incomplete colonoscopy.

Subjects and methods: We prospectively studied 108 patients, 71 women (65.7%) and 37 men (34.3%) with incomplete colonoscopy. Mean age was 65.03 ± 8.5 years (range 28–91). Most frequent causes for incomplete colonoscopy included obstructing masses in 39.8% of patients and tortuous colon loops in 16.8%.

Results: Intracolonic findings in the endoscopically nonvisualized segments of the colon included 45 patients with diverticula and 20 patients with at least 1 polyp > 5 mm. No synchronous lesions were found in proximal segments of the colon. High-clinical-importance extracolonic findings include two patients with unknown liver metastases and one patient with unknown lung metastases.

Conclusion: VC allows complete visualization of the colon in patients with previous incomplete colonoscopy due to a known colonic lesion or anatomical condition.

21- Bicuspid aortic valve and aortic aneurysm associated with less frequency of haplotypes of extracellular matrix metalloprotease-1

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Bicuspid aortic valve (BAV) is the most prevalent cardiac malformation and represents a risk factor for valvular disease and aortic aneurysms. An increased production of matrix metalloproteases (MMP) and alterations of the endogenous inhibitors has been described in BAV. We studied the differences and incidences of diverse polymorphisms (–1607 1G/2G, –519 A/G and –340 T/C) of the MMP-1 promoter region in 90 patients with BAV and 76 controls with tricuspid aortic valve (TAV). 48% of BAV patients presented aortic stenosis, 50% insufficiency, 46% ascending aortic aneurysm (AAA) 8% aortic coarctation and 11% present a family history. The haplotype (1 G/A/C) was significantly lower in BAV (5%) versus TAV (12.7%) p=0.012. Among BAV patients, the haplotype 1 G/A/T, was less common in individuals with AAA (5.1% vs 18%, P=0.01).

Conclusion: Patients with BAV who have AAA are less likely to have MMP-1 haplotypes considered as protectors, and it is associated with AAA.

22- Transoral CO2 laser surgery for supraglottic laryngectomy

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Introduction: There are several therapeutic options for head and neck cancer, including those that provide a good functional outcome without worsening oncological result, like CO2 laser.

Objective: The aim of this study is to analyze both oncological and functional results of CO2 laser surgery in supraglottic cancer.

Material and methods: We studied 57 consecutive patients who underwent a supraglottic laryngectomy using CO2 laser between the years 1999 and 2009. 22 patients were classified as stages I and II and 35 as stage III-IV disease. 50 patients underwent also neck dissection. 15 patients received postoperative radiotherapy. Minimum follow-up was 24 months.

Results: Disease-specific survival rate was 95% and 89.4% for three and five years, respectively. 35.7% of patients had some complication after surgery, being aspiration the most frequent (12.3%). Only two patients (3.5%) received total laryngectomy due to the impossibility of swallowing. Laryngeal function preservation was present in 89.5% of patients. Recurrence rate was 29.8%.

Conclusion: Our results suggest that CO2 laser surgery is a safe and effective treatment for supraglottic cancer, with a low morbidity rate.

23- Subcutaneous xenotransplantation of pancreatic islets using plasma with fibroblasts and mesenchymal cells as scaffold

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Introduction: The beneficial effect of Bone Marrow Mesenchymal Stem Cells (BM-MSCs) in experimental and preclinical regenerative and transplantation models has been attributed to their ability to produce several growth factors and immunomodulatory molecules. All these secreted factors have a paracrine effect which improves microenvironment on injured tissues and modulates the immune response.

Aims: Bearing this in mind, and the development by our group of a novel plasma-based scaffold for successful subcutaneous islet and fibroblasts co-transplantation into diabetic nude mice, it is tempting to introduce BM-MSCs in this system, and check its viability in an immunocompetent model of islet xenotransplantation.

Results: Islet co-transplantation with fibroblasts or BM-MSCs alone didn't allow to maintain normoglycemia more than a week; nevertheless, mice transplanted with islets and both fibroblasts and BM-MSCs, maintained normoglycemia until 1 month.

Conclusions: Combination of BM-MSCs with fibroblasts improves their immunomodulatory effect and, therefore, islet viability.

24- Laparoscopic ileocecal resection in Crohn's disease: safety and short-term outcomes

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Laparoscopic approach in Crohn's disease (CD) has shown advantages in terms of safety and efficacy. The goal of this study is to assess reliability, safety and short-term outcomes of primary laparoscopic ileocecal resection. Retrospective analysis of a prospective database of patients underwent laparoscopic ileocecal resection. Since 2005, 26 patients were selected for primary laparoscopic ileocecal resection excluded those with previous surgeries and complex fistulas. Surgical indications were intestinal obstruction and negative response to medical treatment. Only one case was diverted and postoperative complications were ileus, intrabdominal collections and wound infection, without any anastomotic leakage. Average hospital stay and follow-up were 7.68 days and 42.9 months, respectively. Primary ileocecal resection laparoscopically is a safe and reliable procedure with added advantages and a similar morbidity to the series published in open surgery. Fistulizing disease is not a contraindication in CD for laparoscopic approach.

25- Prognostic value of preoperative serum CYFRA 21-1 determination in epidermoid carcinoma of the esophagus

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Introduction: We evaluate the relationship between the CYFRA values and the different prognostic factors of the esophageal epidermoid carcinoma, as well as survival.

Patients and Methods: A retrospective study has been performed on the 115 patients from whom preoperative CYFRA values were available.

Results: Elevated pre-treatment CYFRA 21-1 levels were identified in 28 out of the 115 patients. According to the different variables of the study, there were no significant differences in the CYFRA values regarding: Tumor localization, depth of invasion, tumoral stage, exeresis, metastasis, resectability, and survival in surgically resected patients. Nevertheless, regarding the presence of adenopathy and survival of the complete series significant differences were observed.

Conclusion: Preoperative CYFRA has proved to be a useful marker as it is correlated with the presence of adenopathy and survival, something which can help to decide on the most appropriate kind of treatment for each patient and offer an individual prognosis.

26- MIS or standard technique in total knee arthroplasty. A prospective study

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Introduction: There are well-established and proven advantages of Minimal Invasive Surgery (MIS) in Total Knee Arthroplasty (TKA) but demands an effort of the surgeons, the learning curve may be long and poor visualization could compromise the proper placement of the components.

Objective: To compare the results of MIS and standard technique in same TKA models.

Material and Methods: 26 MIS-TKA were matched to 36 standards TKA. At six months after the surgery a specific questionnaire was completed as well as the KSS (Knee Society Score) the SF-12 and a visual analogue scale.

Results: The MIS technique required more time of surgery, hospital stay was noticeably shorter and the patients had a reduced requirement for analgesic in postoperative. At six months no differences were found between the groups in KSS, SF-12, patient's satisfaction or subjective improvement.

Conclusions: MIS in TKA showed no improvement over a standard approach in short follow-up.

27- Impact of off- pump coronary artery bypass grafting on postoperative bleeding in high risk groups

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Objective: To know the influence of the off-pump surgery on postoperative bleeding and packed red blood cells transfused in myocardial revascularization surgery.

Methods: All patients operated of elective coronary artery bypass grafting were analyzed from January to September 2010. Four groups at high risk of bleeding were created: renal dysfunction, age > 75, lower body surface and lower body mass index. The influence of the off-pump technique was analyzed using a propensity-score analysis.

Results: Off-pump surgery only predicted less bleeding in patients with renal dysfunction (n=138). It predicted a lower number of packed red blood cells transfused in patients with lower body surface (n=119) and body mass index (n=116) without decreasing bleeding. It did not influence in patients > 75 (n=120).

Conclusions: Off-pump surgery reduces postoperative bleeding in patients with renal dysfunction. However, in patients with lower body surface or body mass index it decreases packed red blood cells transfused without reducing postoperative bleeding.

28- Minimally invasive treatments: endoscopic ventriculostomy

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The endoscopic ventriculostomy of the third ventricle is an effective procedure in handling certain types of non-communicating hydrocephalus and secondary aqueductal stenosis and congenital or acquired ventricular system compression due to tumors. We show a video on the performance of the technique: through a Kocher burr, 2–3 cm from midline and 1 cm anterior to coronal suture, a cannula is inserted into the lateral ventricle through which passes the camera to visualize the ventricular anatomy. Through the foramen of Monro we access into the third ventricle where we recognize the mammillary bodies and Lilliequist membrane. In front of the mammillary bodies the floor of the third ventricle is fenestrated using a Fogarty 3. This communication connects the third ventricle with prepontine and interpeduncular cistern allowing CSF drainage through this hole. The development of this technique has expanded neuroendoscopic indications such as biopsies or removal of endoscopic ventricular tumors.

29- Study *in vitro* of the use of bone marrow mononuclear cells on derman fibroblast proliferation

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Introduction: Skin wounds are difficult to treat and regenerative medicine is an alternative therapeutic strategy for repair of damage tissue. Direct injection of autologous bone marrow mononuclear cells has been used with encouraging results for the treatment of pressure ulcers. Dermal fibroblasts are the predominant mesenchymal stem cell type in cutaneous wound and are required for extracellular matrix deposition.

Objective: The aim of this study was to investigate the possible effect of bone marrow mononuclear cells on fibroblast proliferation.

Methods: Dermal fibroblasts were co-cultured with bone marrow mononuclear cells in aerobiosis conditions as well as microaerobiosis. Data were statistically analyzed with an ANOVA multifactor test.

Results and Discussion: Statistical analysis showed a significant increase of dermal fibroblasts proliferation. Our observations suggest that secretory factors derived from bone marrow mononuclear cells increase dermal fibroblast proliferation *in vitro*. In addition, these data may support the use of this type of cells in cellular therapy for wound healing.

Poster Presentations

1- Excision of a retroperitoneal tumour. Casleman's disease. Use of tachosil for lymphorrhoea decreasing

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Introduction: Casleman's disease is characterized by vascular and lymphoid tissue proliferation.

Case report: We report a patient presenting colic abdominal pain and 3 daily stools. A rounded injury was observed in the ultrasound scan and it did not present antecava or retroportal vascularization. A retroperitoneal tumour firmly stuck to the left renal cava vein and situated behind the hepatic artery was removed. The tumour rejected the hepatic artery and compressed the left main branch. A tachosil plate is placed in order to avoid lymphorrhoea. Histological analysis revealed a lymphatic node, with an increase of lymphoid follicles, atrophic germinal centres and a proliferation of wall hyalinization vessels.

Discussion: Castleman's tumour is classified as an unicenter located or multicenter widespread form, based on clinical and radiologic findings. From the histological point of view, it is divided in vascular, plasmacytic or mixed cellularity hyaline. Surgical excision is chosen as treatment for located form.

2- Predictive clinical signs of difficult airway in bariatric surgery

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The difficulty in airway management in patients suffering from morbid obesity makes it necessary to look for predictive clinical signs that help us envisage a difficult airway (DA). The aim is, on the one hand, to assess the relationship between the predictive exploratory tests of DA and the findings of the direct laryngoscopy and, on the other hand, to study the connection between the body mass index (BMI) and the Cormack-Lehane classification. Descriptive prospective study of 111 patients who underwent bariatric surgery at our hospital between 2004 and 2008. BMI and 4 predictive airway tests were recorded: Mallampati score, thyromental distance, perimeter of the neck and degree of mobility of the atlanto-occipital joint, together with the Cormack-Lehane laryngoscopic view degrees. No statistically significant relationship was found between the predictive signs of DA and the Cormack-Lehane classification. There is no statistically significant relationship between BMI and the Cormack-Lehane classification.

3- Minimally invasive approach to skull base injuries: supraorbital

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Neurosurgery has developed minimally invasive techniques to reduce complications, improving patient recovery and cosmesis results. Minimally invasive supraorbital approach is designed to skull base lesions accessible through this craniotomy. We show this minimally invasive supraorbital approach in 3 patients. Placing the patient must be in retroflexion, lateralization to the contralateral side, and lateral-flexion. Once we have identify the main anatomical structures an incision is made in the eyebrow. After separating the frontal and temporal muscles, a single trephine after the temporal line is used to perform the craniotomy avoiding entering the orbit. The dural is opened arched based on the orbit. The front lobe has to be retracted to reach the base implantation.

There were no complications and the resection of the tumor was complete with a satisfactory cosmesis result as surgical incision was covered by the eyebrow. Therefore, the minimally invasive supraorbital approach is a technique to consider in skull base lesions.

4- Three dimensional imaging of SPECT and radioguided navigation for locating sentinel lymph node in malignant melanoma

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The freehand SPECT system combines functional images and three dimensional (3D) images providing anatomical references. The objective was to assess the usefulness of this system for radioguided navigation related to sentinel node (SN) location. A 42 year-old man diagnosed with malignant melanoma located in the right pectoral region. Several hours before surgery, the patient underwent a preoperative lymphoscintigraphy. In the operating room, referrals were placed on the patient and on the gamma probe to establish its position, and a 3D image was obtained composing the fusion in 2 views. This image is correlated with radioactivity emitted and distance from the tip of the gamma probe. SN was identified in right axillary region and located with the help of the 3D information obtained with this navigation system. This system provides 3D anatomical information and is extremely useful in complex lymphatic drainage and difficult access.

5- Role of noninvasive coronary angiography through computed tomography in patients who underwent a vascular replacement surgery

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Noninvasive coronary angiography carried out through computerized-tomography (CT), is validated to know the coronary anatomy in patients who are going to undergo a valvular replacement surgery and not having any recognized coronary pathology. Our objective is to analyze the use of this technology in our centre. We recollect 53 consecutive patients from 2006 to 2010. 58% men, average age 64 (SD: 16) years. The HeartScore showed intermediate risk population (median 2%, quartile rank 0%–8%). Coronary injuries were not found in 28 patients (52.8% of the total). 15 patients presented injuries (28.3%). The test was not assessable by excess of coronary calcium in 9 cases. The technique showed artifacts in 18 patients (34%). 100% of the group with coronary injuries or nonassessable test by calcium were sent to invasive coronariography later. In our sample the noninvasive strategy was conclusive in 52.8% of the patients.

6- Autologous and allogeneic myoblast transplantation in an experimental model of acute myocardial infarction

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Introduction: The use of autologous cells to regenerate the myocardium after AMI is not always possible and the use of allogeneic cells is needed.

Aim: Study of survival of Mbal transplanted into NZW rabbits in which AMI has been induced through LAD ligation.

Methods: Group I: animals with AMI; Group II: autologous myoblast transplantation (Mbau), without AMI; Group III: allogeneic myoblast transplantation (Mbal) 24 hours post-AMI. Allogeneic recipients receive CyA. Total CK, MB-CK, troponin I, LDH, ALT, AST and lactate were determined. Histology and immunohistochemistry studies are carried out as well.

Results: Group I: There is AMI in the LAD area 7 days post-ligation. Serum parameters go back to basal levels by day 7. In Groups II and III, Mbau and Mbal are detected.

Conclusions: All animals survived. Immunosuppressive therapy does not bear any adverse effect over survival. This model could be adequate to study cell transplantation after AMI.

7- Physical laparoscopic simulator with anatomical bass-relief development by means of amages obtained through MRI study

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Background: Simulation technology seems useful in learning of image-based processes such as laparoscopy. The aim of this work was to develop a physical simulator for training in laparoscopic surgery with an exact human anatomy of the abdominal cavity.

Methods: Abdominal cavity reference was taken from four people (Height: 173.33 ± 2.08 cm, Weight: 63.33 ± 21.05 ± 9.23 Kg and BMI 2.71). The study was divided in three phases: 1) Anthropometric research by MRI, 2) Transfer of measurements obtained at MRI to 3D models, 3) Design of the physical simulator and development of anatomical illustrations.

Results: Development of a simulator, which emulates the abdominal cavity, and the real sized human anatomy of the urinary, genital and digestive tract, allowing placement of different structures or organs inside.

Conclusions: The developed simulator is useful for laparoscopic skills acquisition, as well as allowing training in others approaches like NOTES and single port surgery.

8- Anatomy of the rabbit knee in orthopaedic surgery investigation

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Introduction and objectives: Research in Orthopaedic Surgery requires animal models that reproduce similar injuries to those found in humans. The objective is to define which of the structures that most commonly suffer disease in humans also appear in the rabbit knee.

Materials and methods: To conduct the study, one New Zealand rabbit was sacrificed. We then made an anatomical dissection of the knee.

Results: As shown in the anatomical images, in the rabbit knee it is possible to identify the majority of anatomical structures found in the human knee. The muscular layer, the lateral ligaments, the condyles, the intercondylar groove, the tibial plateau, the menisci and both cruciate ligaments have a similar structure than human.

Comments and Conclusions: The main structures of the human knee have their correspondence in the rabbit, its anatomical structure and size allow it to be used for multiple studies in orthopaedic surgery.

9- Current laparoscopic training versus videogames

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Background: The laparoscopic learning process/curve is a main drawback of this approach, which demands for the use of different teaching tools. The aim of this work is to implement and validate a video game that allows for simulation of laparoscopic surgery.

Methodology: Video game creation process and the subjective assessment were performed by ten veterinary laparoscopy specialists.

Result: PRESENCIAL4[®] was successfully developed. Furthermore it was positively assessed by the consulted laparoscopy specialists.

Conclusions: PRESENCIAL4[®] is a feasible way to simulate laparoscopic procedures, allowing for the learning of anatomic and surgical protocol, and reducing the need for constant tutoring in basic training level. PRESENCIAL4[®] has been subjectively validated by specialists in laparoscopic surgery.

10- Heterotopic transplantation of the uterus in the sheep with anastomosis of the great vessels

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Aim: To develop a model of whole uterus transplant in the ewe, applicable to the human brain dead donor setting.

Methods: Two donors and one recipient were done.

Donor: En bloc harvesting of the uterus, appendages, and proximal vagina, with vessels including distal aorta and cava. Perfusion with preservation fluid through iliac artery after aorta cross-clamping.

Recipient: Heterotopic implantation in lower abdomen. End-to-side anastomosis of aorta and cava. Cutaneous vaginal stoma.

Results: uterine veins of the ewe differ from the human, forming the utero-ovarian veins which drain into the common iliac or the distal cava. En bloc harvesting allows for a rapid graft preparation, with vascular cuffs easy to anastomose. Heterotopic implantation with vaginal stoma facilitates biopsy and follow-up of the graft.

Conclusion: Whole heterotopic uterus transplantation in the sheep, with anastomosis of the great vessels, can be an experimental model applicable to the human brain dead donor setting.

11- Impact of neoadjuvant therapy in surgery of gastric cancer

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Introduction: Patients who receive neoadjuvant chemotherapy have a response by almost 50% and complete regression in 5.5%. Two-year general survival is 33%.

Objective: Five-year survival of patients diagnosed with gastric and esophago-gastric union cancer and underwent to salvage surgery after neoadjuvant chemotherapy.

Methods: Retrospective study January 2008–February 2011, prospective until January-2013. The data presented are to date April the first 2011. Sample: 15 patients, 73% men, age average 61.5 years (37–76).

Results: Stages more frequent: TNM III-IV (26.7%). Response to oncologic therapy: 33.3%. Complete response: 13.3% No response: 46.7%. Progression of the disease: 20%. Exeresis-lymphadenectomy D1+: 73.3%. Feeding yeyunostomy: 100%. Survival superior to 18 months: 33.3% superior to 31 months: 26.7%.

Conclusions: Neoadjuvant treatment in the gastric cancer improves the prognosis of the disease and allows oncologic surgery in patients who initially had been no resectable

12- Computer-assisted surgery in the placement of femoral component in total knee arthroplasty. A prospective study with CT

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Introduction: Implant alignment in Total Knee Arthroplasty (TKA) plays a key role in the longevity of the implant. Computer-assisted surgery (CAS) facilitates the correct placing of the prosthetic components in total knee replacement in frontal plane.

Objective: To know if the CAS improves the position of the TKA femoral component.

Material and methods: Pre and postoperative computer tomography (CT) were made in 20 TKA implanted in knee without deformities. The standard instruments were used in 8 cases and the CAS was used in 12. We studied the rotational angulation of the femoral distal and the situation of the femoral prosthetic component.

Results: No significant statistical differences were found in the final rotation of femoral component depending on the use of the navigation.

Conclusions: We cannot affirm that the navigation system will be able to provide a better placement of the femoral component in the axial plane than the standard technique.

13- Predictive factors of postoperative bleeding and packed red blood cells transfused in coronary artery Bypass grafting

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Objective: To know the factors associated with postoperative bleeding and packed red blood cells transfused in myocardial revascularization surgery

Methods: All patients operated of elective isolated coronary artery bypass grafting were analyzed from January 2007 to September 2010. Factors associated with cumulative bleeding and packed red blood cells transfused were calculated by multivariate analysis.

Results: 480 patients were analyzed. Preoperative creatinine levels, lower body mass index, antiplatelet therapy and postprotamine activated clotting time were associated with postoperative bleeding and packed red-blood cells transfused. Lower body surface, on-pump surgery and preoperative hemoglobin only influenced in packed red blood cells transfused.

Conclusions: Preoperative creatinine levels, lower body mass index, antiplatelet therapy and postprotamine activated clotting time are associated with postoperative bleeding, which probably leads to a greater number of packed red blood cells transfused. Lower preoperative hemoglobin, lower body surface and on-pump surgery are only associated with packed red blood cells transfused.

14- Long-term prognostic factors in surgical treatment of gastric cancer

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Introduction: Gastric cancer (GC) is a common cancer. Surgical resection is considered the treatment of choice.

Objectives: To analyze the long-term survival and prognostic factors after curative intent surgery.

Material and Methods: A retrospective study of 454 patients who underwent surgery for gastric adenocarcinoma was conducted.

Results: 454 patients (264 men, 190 women) were treated by subtotal gastrectomy (45, 2%), total gastrectomy (35, 3%). D2 lymphadenectomy behaved as a protective factor. Sex, age, stage III and IV, the location and number of infiltrated lymph nodes behaved as poor prognostic factors in multivariate analysis. Overall survival after R0 surgery was 34% at 5 years and 23% at 10 years. A recurrence rate of 48% is observed in 5 years.

Conclusions: The prognosis of GC remains poor. The overall survival at 5 years does not exceed one third of patients undergoing R0 surgery and 50% will recur after 5 years.

15- Morbidity and mortality of hepatocellular carcinoma resection

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Aims: To describe the single-center experience with surgical anatomical resection (AR) or wedge resection (WR) for hepatocellular carcinoma (HCC)

Methods: The records of 56 patients who between February 2002 and October 2010 underwent liver resections for HCC were analyzed with regard to survival and predictive factors.

Results: 75% had cirrhosis Child-Pugh class A. Mean preoperative AFP was 514 ng/dl (1.3 to 17500). AR (segmentectomy/hepatectomy) was performed in 75% of cases, and WR in 25%. The mean operative time was 176 minutes (90–280) and 184 minutes (90–260), respectively (p = 0.68). In healthy liver, AR was used in 93% versus 69% in cirrhosis. Intraoperative transfusions was needed in 33% of AR and 21% in WR (p = 0.25). Pringle manoeuvre average stay, median survival (41 vs. 45 months AR vs. WR) and recurrence were similar in both groups. The only prognostic independent factor demonstrated was Pringle time in the AR

Conclusions: Anatomical liver resection did not improve the long-term outcome of HCC in our patients.

16- Making of colostomy in the age of minimally invasive surgery

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Introduction: Nowadays, the single-incision laparoscopic surgery allows the creation of colostomy visualizing the abdominal cavity, which permits an easy mobilization of the colon, if necessary.

Aim: The aim of this study is to present the advantages of single-incision laparoscopy in the making of colostomy, being no similar articles published yet.

Methods: We describe the steps necessary to perform single-incision laparoscopic colostomy, after five cases experience, since 2010, making at the same time a review of the evolution of the minimally invasive surgery in this procedure.

Conclusions: In particular cases, the technique described below can offer a fast and simple way of realization of colostomy, avoiding other incisions.