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Oral Presentations

KARL STORZ - EAES AWARD SESSION

O001 - Liver and Biliary Tract Surgery

RECURRENT HEPATOCELLULAR CARCINOMA SUCCESSFULLY TREATED WITH LAPAROSCOPIC THERMAL ABLATION.

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Aggressive treatment of intrahepatic recurrence of hepatocellular carcinoma (HCC) increases patients' survival, but most frequently, these patients are not suitable for hepatic resection (HR).

The aim of this study was to analyze the indications for and results of laparoscopic radiofrequency ablation (RFA) in the treatment of recurrent HCC after HR or after RFA.

A retrospective analysis was conducted of 88 consecutive patients with recurrent HCC (group REC) who underwent to laparoscopic RFA after prior either RFA (66 pts.) or partial HR (22 pts.) as initial local treatment. Another 170 patients with primary HCC (group PRIM) treated by laparoscopic RFA were regarded as a control group. All patients were in stage A according BCLC classification. The incidences of postoperative morbidity (18% vs 21, respectively) and mortality (0% both) were similar for patients with prior RFA and patients with prior HR ($p = NS$). This group had a longer hospital stay than group with prior RFA (median time of 5 days vs. 3 days, respectively; $p = 0.0016$). Both overall survival and DFS rates were not significantly different between patients with prior RFA (cumulative 3-year survival rate of 59%; cumulative 3-year DFS of 21%) and patients with prior HR (cumulative 3-year survival rate of 78%; cumulative 3-year DFS of 8%; $p = NS$). Comparing group REC vs. group PRIM, the incidences of morbidity (21% vs 20%) and mortality (0%) were similar ($p = NS$). Cumulative 3-year survival rate were 63% in REC group and 59% in PRIM rec ($p = 0.5739$), while cumulative 3-year DFS were 17% in REC group and 22% in PRIM group ($p = 0.5266$). Similar HCC recurrences occurred following similar follow-up durations in all groups: only multiple HCC recurrences occurred more frequently in the group after HR ($p = 0.039$) than after RFA.

Laparoscopic RFA can be performed safely and may be efficacious, in terms of overall survival and DFS, for selected patients with intrahepatic HCC recurrence after prior both RFA and HR. Furthermore, laparoscopic RFA for recurrent HCC obtains similar survival and DFS rates comparing to laparoscopic RFA for primary HCC without increasing morbidity. Laparoscopic RFA could be proposed as first-line treatment for intrahepatic HCC recurrence in selected patients.

O002 - Intestinal, Colorectal and Anal Disorders

EXPRESSION OF A-DEFENSINS, TLR2 AND TLR4 IN THE INFLAMMATORY RESPONSE IN OPEN AND LAPAROSCOPIC COLECTOMY FOR COLORECTAL CANCER

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Background: Laparoscopic surgery reduces the trauma and the patients benefit from maintained immune function. Toll-like receptors (TLRs) 2 and 4 are the first sensors-recognition receptors of the invading pathogens for the innate immune response. a-Defensins play an important role in host defense, early acting in phagocytosis.

Aim: To compare the inflammatory response, and then the stress response, during Laparoscopic and Open colectomy for cancer by calculating together with IL-6, TNF-a, and hsCRP, a-defensins, TLR-2 and TLR-4 as the first sensor-recognition receptors.

Material and Methods: A total 40 patients with colorectal cancer were randomized in two groups. Group A ($n = 20$) open colectomy. Group B ($n = 20$) Laparoscopic colectomy. One hour preoperatively an epidural catheter was placed in all patients and Rupivocaine was administered perioperatively and 48 hours postoperatively. Blood samples have taken for calculation of IL-6, TNF-a, hsCRP, a-defensins, TLR-2 and TLR-4 preoperatively, 5 min after deflation of pneumoperitoneum (group B) or 5 min after division of the colon (group A), 6 and 24 hours postoperatively.

Results: The mean operative time was 115 for group A and 142 min for group B. The mean blood loss was 240 and 105 ml respectively ($p < 0.001$). The mean hospital stay was 8 and 5 days respectively ($p < 0.05$). IL-6 was significant higher in group A vs B at 6 and 24 h postoperatively ($p < 0.0001$), hsCRP was significant higher in group A vs B at 24 h postoperatively ($p < 0.001$). No difference in TNF-a values. TLR-2 was significant higher in group A vs B at 5 min and 24 h postoperatively ($p = 0.02$, $p = 0.01$ respectively). TLR-4 was significant higher in group A vs B at 5 min postoperatively ($p < 0.0001$). a-Defensins levels were statistically significant lower in group B vs group A, 5 min and 24 hours postoperatively ($p < 0.002$ and $p < 0.007$ respectively).

Conclusion: The inflammatory response, and then the stress response, is significant decreased during laparoscopic colectomy than during open colectomy, for colorectal cancer. This is obvious in short-term clinical benefit of the patient, and give the tinder for further investigation of the long-term results of laparoscopic colectomy versus open colectomy for colorectal cancer. (Clinical Trials identifier : NCT00942461 at www.clinicaltrials.gov)

O020 - Abdominal Cavity and Abdominal Wall

COMPARISON OF A 35G/M2 WITH A 16 G/M2 TITANIZED POLYPROPYLENE MESH IN HERNIA REPAIR IN TAPP TECHNIQUE

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Aims: The aim of this prospectively randomized single blinded clinical trial was to compare the incidence of chronic pain after laparoscopic transabdominal preperitoneal hernia repair (TAPP) between a 35 g/m2 titanized polypropylene mesh (TiMesh-Lightâ) and a 16 g/m2 titanized polypropylene mesh (TiMesh-Extralightâ).
Methods: 380 patients with 466 inguinal hernias were operated between 2002 and 2006 using laparoscopic transabdominal preperitoneal (TAPP) technique. Mesh fixation with staples was carried out routinely. After the dissection was completed just prior to the implantation of the mesh, patients were randomized into two groups. In Group A 250 (53.6 %) inguinal hernias were repaired with a 35 g/m2 TiMesh-Lightâ and in Group B 216 (46.4 %) inguinal hernias were repaired with a 16 g/m2 titanized polypropylene mesh TiMesh-Extralightâ. The primary outcome consisted in chronic pain 3 years after surgery. The degree of pain was determined using visual analogue scale (VAS) with a range from 0 to 10. The secondary outcome consisted in the rate of recurrence.
Results: The postoperative period of observation comprised at least three years for every patient. In both groups 90 % of the patients could be questioned and examined clinically: in Group A 5.3 % (TiMesh-Lightâ) and in Group B 1.5 % (TiMesh-Extralightâ) of the patients suffered from chronic pain. Chronic pain was significantly more common in Group A than in Group B ($p = 0.037$). There was no difference concerning the rate of recurrence: Group A 3.1 % and Group B 2.6 %, between the groups ($p = 0.724$).
Conclusion: Chronic pain is not very common in patients having their inguinal hernias repaired with titanium covered polypropylene mesh. Reducing the material load from 35 g/m2 to 16 g/m2 seems to further improve biocompatibility of these meshes improving clinical outcome by reducing chronic pain to a rare event. The role of staples in causing chronic pain following inguinal hernia repair may be overestimated. There was no evidence supporting the notion that the use of the 16 g/m2 titanized meshes is associated with increased recurrence rates.

O021 - Abdominal Cavity and Abdominal Wall

LAPAROSCOPIC TREATMENT OF INCISIONAL AND VENTRAL HERNIAS WITH PARIETEX COMPOSITE TM MESH.

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Aims: The laparoscopic repair for ventrale and incisional hernias is now widely spread in relationship to the improvement of surgical technique and new mesh. The aim of this study is to establish the safety, efficacy, and feasibility of laparoscopy for treatment of primary and incisional ventral hernias with PARIETEX Composite TM mesh.
Methods: Between January 2007 and November 2010, 87 patients were admitted at our Department with diagnosis of primary abdominal wall ventral hernia or incisional hernia and underwent laparoscopic surgical repair with PARIETEX Composite TM mesh. The type, size and number of surgical defect, mean operative time, rate of intra and postoperative complications and rate of recurrence at 1 year follow-up are retrospectively analysed.
Results: We performed 87 laparoscopic repair for abdominal wall hernias: 28 (32%) for incisional hernia with a simple abdominal wall defect, 26 (30%) for incisional hernia with multiple defects, 21 (24%) for umbilical hernia, 6 (7%) for hepigastric hernia and 6 (7%) for associated umbilical and hepigastric hernia. There were 40 male and 47 female, mean age 66 years, 6 patients (7%) were obese (BMI > 35 Kg/m2). Mean operative time was 100 min (range 30-180), conversion rate was 1%. Mean size of abdominal defect was 5 cm (range: 4-12). The mortality rate was 0%. The overall morbidity was 16% (14 patients): the rate of intraoperative complications was 1%; the rate of early postoperative complications was 7%. At 1 year follow-up, we observed 6 cases of small but asymptomathic seroma, 1 case of persistent hematoma, 1 case of persistent abdominal pain with intraparietal hematoma, 2 case of hernia recurrences.
Conclusions: Laparoscopic repair using PARIETEX Composite TM mesh is an effective and safe procedure with very low morbidity, low rate of postoperative pain and recurrence, particurarly in obese patients. These results may be due to respect of clinical indications and to appropriate experience in laparoscopic techniques; the easy integrability and low tendency to endoabdominal adhesions of this type of mesh are an other very important factor for good results of this surgical approach. Key words: laparoscopy - incisional hernia - ventral hernia - PARIETEX Composite TM mesh.

O023 - Abdominal Cavity and Abdominal Wall

PROLIFERATION AND ACTIVITY OF HUMAN FIBROBLASTS AND MESOTHELIAL CELLS ON A CLEAR COMPOSITE MESH (CMC): AN 'IN VITRO' MODEL.

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Introduction: The design of an ideal composite meshes has to provide a smooth, non-erosive, anti-adhesive visceral side and a macroporous ventral side, allowing for fibroblast or mesothelial cells ingrowth. Macroporous polypropylene (PP) monofilament meshes are known to guarantee a good fibroblast ingrowth and anchorage at the fascial side. No data are currently available about the possible anti-adhesion properties of a smooth PP film.
Purpose: The aim of this work was to characterize, by an 'in vitro' study, the properties of a new prosthesis, named Clear Composite Mesh (CMC). It is formed by two bilayers prepared with the same material showing different morphology: a macroporous PP mesh and a smooth transparent PP film.
Materials & Methods: The effect of CMC was tested on human fibroblasts BJ (ATCC, Rockville, MD, USA) or on human primary mesothelial cells cultured on composite or film alone for 7, 14, 21, and 28 days. Cell growth was determined by counting the cells in a Burker chamber. The mesothelial cells was characterized by immunohistochemical analysis of vimentin. The ability of CMC in inducing fibroblast activity was investigated by immunohistochemical analysis of Type I collagen deposition. The possible induction of inflammation process was analysed as pro-inflammatory cytokine release in the culture medium.
Findings: Fibroblasts and mesothelial cells were able to proliferate on the composite; differently, no cell growth was evident on the film alone, this evidencing the inability of the cells to grow in absence of the mesh. Moreover, on the CMC colonized be fibroblasts the amount of Type I collagen present on CMC increased during the time, being the major value present at 21 days. A transient inflammation induction was evidenced in the first experimental times.
Discussion/Conclusion: The obtained results evidenced that the new prosthesis formed by two PP layers with different morphology is able to be colonized by fibroblasts or mesothelial cells on the side facing abdominal wall, without inducing adhesion formation on the side facing viscera.
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O024 - Abdominal Cavity and Abdominal Wall

NEW FIXING METHOD FOR OPEN AND LAPAROSCOPIC SURGICAL PROSTHETIC MATERIALS TESTED ON ANIMAL MODELS

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Introduction: the abdominal wall defects surgery needs of prosthetic light, resistant, biocompatible and economic materials, to reduce recurrence risks, shorten recovery length and improve the patients postoperative comfort. The Ideal prosthesis would be simply implantable, biocompatible and usable both in open and laparoscopic surgery. The material we tested is also bioadhesive.
Methods&Materials: we studied a new material, the Buchypaper of Carbon Nanotubes (BP). About BP we observed that it can be tailored with scissors, it can be sterilized, it is superlight, flexible, bioadhesive and biocompatible. The BP can be linked to any kind of prosthetic material and employed to fix the prosthesis to biological alive tissues. We tested on Sprague Dawley rat model and bench tests on New Zeeland female rabbits. The measurement of the bioadhesivity was realized by peeling test at 90° with INSTRON 4502.
Results: we compared BP Fmax = 4.1 N versus Parietene Progrip® 'self gripping' Fmax = 0.01 N. Infinity GORE Fmax = 0,3 N, were fixed to the biological support with fibrin glue Tissucol® Baxter. Test show the adhesion strength of new dry BP sample applied on biological support. As peel force is applied we measure the displacement of self-gripping BP from fascia and muscular layer. For the samples of BP tested on the smooth surface (BPs), BP tested on the rough surface. We compared these results with the peeling test of Parietene Progrip® 'self gripping'. The bio-adhesiveness of the side coated with polyglactin is very low, showing maximum peel strength of only 0.001 N/mm, 100 times lower than that recorded for BPr sample. Conclusions: the tests showed a significant performance difference among the prosthetic samples. At the light of our experience we think that the BP can replace any kind of suture and biologic glues in the fixing prosthesis materials in the alive tissues, avoiding theoretically but possible infections and chronic pain due to nerve 'entrapment'. The BP showed a bioadhesivity 100 times bigger than the best self gripping actually marketed prosthetic material. We believe that the modifiable BP bioadhesivity, if largely employed, can radically change the fixing surgical technique.