

CROATIAN INTERNATIONAL PUBLICATIONS

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Gulin M¹, Klarić D², Ilić M³, Radić J⁴, Kovačić V⁵, Šain M⁴. Blood Pressure of Maintenance Hemodialysis Patients in the Dalmatian Region of Croatia: Differences between Hospital and Out-of-Hospital Dialysis Centers. *Blood Purif.* 2017;44:110-121.

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AIMS: This study was aimed at comparing the incidence of arterial hypertension and blood pressure (BP) variance in hospital and out-of-hospital hemodialysis (HD) patients during HD sessions. **METHODS:** A cross-sectional study was conducted for 1 week at all the HD centers in Dalmatia, Croatia. The pre-, intra-, and post-dialysis BP values were collected for 3 consecutive HD sessions per patient. **RESULTS:** Of the 399 subjects, 73.9% were hypertensives, who showed higher interdialytic weight gain compared to the normotensives (2.58 vs. 2.40). Hospital and out-of-hospital HD patients received identical antihypertensive therapies, except that beta blockers were more frequently administered to out-of-hospital HD patients. Higher pre-, intra-, and post-dialysis BP values were recorded in patients at out-of-hospital HD centers. **CONCLUSION:** The differences in BP variability and antihypertensive therapies administered to hospital HD patients as compared to out-of-hospital HD patients may reflect differing approaches by the nephrologists at these centers.

Pogorelić Z¹, Katić J², Mrklič I³, Jerončić A⁴, Šušnjar T⁵, Jukić M⁵, Vilović K³, Perko Z⁶. Lateral thermal damage of mesoappendix and appendiceal base during

laparoscopic appendectomy in children: comparison of the harmonic scalpel (Ultracision), bipolar coagulation (LigaSure), and thermal fusion technology (MiSeal). *J Surg Res.* 2017;212:101-107.

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BACKGROUND: The aim of this study was to compare lateral thermal damage of mesoappendix and appendiceal base using three different instruments for sealing and cutting of mesoappendix. **MATERIALS AND METHODS:** A total number of 99 patients (54 males and 45 females) who underwent laparoscopic appendectomy because of suspected appendicitis between December 2013 and May 2015 were enrolled in the study. The patients were divided in three groups based on instrument used for sealing of mesoappendix: group 1 (Ultracision; n = 36), group 2 (LigaSure; n = 32), and group 3 (MiSeal; n = 31). Lateral thermal damage, intraoperative and postoperative complications, duration of surgery, hospital stay, and economic value were compared within groups. **RESULTS:** The median age of patients was 14 y (range 3-17). A histopathologic analysis revealed a positive diagnosis of appendicitis in 84 patients (85%). The median lateral thermal damage on appendiceal base using Ultracision, LigaSure, and MiSeal was 0.10 mm, 0.16 mm, and 0.10 mm respectively, and on mesoappendix, 0.08 mm, 0.13 mm, and 0.08 mm, respectively. Significantly higher thermal damage was found on mesoappendix (P = 0.015) and appendiceal base (P =

0.012) in patients treated with LigaSure than in patients from other groups. There were no statistical differences among the groups regarding intraoperative and postoperative complications ($P = 0.098$). No significant difference in thermal damage between appendicitis and nonappendicitis group was found ($P = 0.266$). CONCLUSIONS: Using of Ultracision, LigaSure, and MiSeal for sealing of mesoappendix in laparoscopic appendectomy in children is safe and useful. LigaSure produces significantly greater lateral thermal damage compared with other instruments.

Rožanković M, Marasanov SM, Vukić M. Cervical Disk Replacement With Discover Versus Fusion in a Single-Level Cervical Disk Disease: A Prospective Single-Center Randomized Trial With a Minimum 2-Year Follow-up. Clin Spine Surg. 2017;30(5):E515-E522.

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STUDY DESIGN: Prospective randomized study. **OBJECTIVE:** To compare the clinical outcome after Discover arthroplasty versus anterior cervical discectomy and fusion (ACDF) in patients treated for symptomatic single-level cervical disk disease. **SUMMARY OF BACKGROUND DATA:** ACDF is still the gold standard for surgical treatment of cervical spine degenerative disk disease. However, results of many studies suggest that it may cause degenerative changes at levels immediately above and below the fusion, known as adjacent segment degenerative disease. Cervical arthroplasty has recently been introduced as an alternative to standard procedure of ACDF. It showed decreased surgical morbidity, decreased complications from postoperative immobilization, and an earlier return to previous level of function. **MATERIALS AND METHODS:** A total of 105 consecutive patients with single-level cervical disk disease, producing radiculopathy and/or myelopathy were randomly divided into groups to undergo ACDF or Discover arthroplasty. All patients were evaluated with preoperative and postoperative serial radiographic studies and clinically, using Neck Disability Index, Visual Analog Scale and neurological status at 3, 6, 12, and 24 months. **RESULTS:** The results of our study indicate that cervical arthroplasty using Discover Artificial Cervical Disc provides favorable clinical and radiologic outcomes in a follow-up period of 24 months. There has been significant improvement in clinical parameters, Visual Analog Scale and Neck Disability Index, at 3, 6, 12, and 24 months in arthroplasty group comparing to

control group. **CONCLUSION:** The Discover artificial cervical disc replacement offers favorable outcome compared with ACDF for a single-level cervical disk disease at short-term and long-term follow-up.

Perisa MM^{1,2}, Sarcevic B¹, Troselj KG³, Grsic K⁴, Sitic S¹, Seiwerth S². Expression of nm23-H1 and COX-2 in thyroid papillary carcinoma and microcarcinoma. Oncol Lett;13(5):3547-3555.

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The expression of non-metastatic expressed/non-metastatic 23 nucleoside diphosphate kinase 1 (nm23-H1) and cyclooxygenase 2 (COX-2) proteins in thyroid carcinoma have been analysed in a number of previous studies, but this requires further study. The current study focused on the expression levels of nm23-H1 and COX-2 in 130 human thyroid papillary carcinoma (PTC) tissues. Of the 130 PTC tissues, 55 were classified as microcarcinoma and may provide information on the development of the specific characteristics of this tumour type. Routine histopathological examination and immunohistochemical detection of nm23-H1 and COX-2 expression was performed on 130 PTC tissues from patients treated in the Clinical Hospital for Tumours (Zagreb, Croatia) between January 2000 and December 2007. The stain intensity of nm23-H1 and COX-2 proteins was compared with the characteristics of the patients and the tumour. The highest overall expression rate of nm23-H1 and COX-2 was 90 and 67.6%, respectively, and the joint expression of these proteins was statistically significant. The median expression level of nm23-H1 was significantly increased in the classical and follicular histological group of the PTC tissues compared with tissues from other histological groups. The median expression level of COX-2 was significantly increased in the follicular histological group, and reduced in the diffuse-sclerosing group of PTC tissues. All the metastatic microcarcinoma tissues had increased expression levels of the two proteins in comparison with microcarcinoma tissues without lymph node me-

tastases; however, this variation was only statistically significant for COX-2 expression levels. Therefore the results of the current study indicate that COX-2 protein levels may be able to differentiate which thyroid papillary microcarcinoma tumours possess metastatic potential.

Lapić I, Juroš GF, Rako I, Rogić D. Changing the electronic request form proves to be an effective tool for optimizing laboratory test utilization in the emergency department. *Int J Med Inform.* 2017;102:29-34.

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OBJECTIVES: Appropriate laboratory utilization more often than not needs to be initiated by the laboratory. This study was performed to analyze the impact on test ordering patterns in the emergency department obtained by omitting certain tests from the electronic tick box request form. The tests could still be ordered by writing the full name of the test or by a phone call. **METHODS:** Erythrocyte sedimentation rate (ESR), fibrinogen, aspartate aminotransferase (AST), calcium and lipase were omitted from the electronic request form and could subsequently be ordered either by phone or a typed-in request. A reflex testing protocol was elaborated for reduction of creatine kinase (CK) and CK-MB analyses. All interventions were introduced with prior consultation with clinical staff and according to current guidelines. The reduction of test orders and costs in the post-intervention period was assessed. All data were retrieved retrospectively from the laboratory information system (LIS). **RESULTS:** Disappearance from the tick box request form resulted in a significant decrease in the number of requests for targeted tests in the post-intervention year, mostly affecting AST and fibrinogen (83% and 79% reduction of ordering, respectively), followed by a 58% reduction in calcium orders, and 54% and 43% reductions in ESR and lipase requests, respectively. A substantial reduction in CK requests was also observed, while CK-MB requests almost disappeared. Annual cost savings that emerged from all implemented interventions were estimated to be 19,445€. **CONCLUSION:** Significant reduction in ordering of selected tests was achieved simply by limiting their availability in hospital computerized order entry (COE) system. The present data suggest that removal of laboratory tests from the electronic request form can be an effective tool for changing physicians' test ordering behavior.

Orešković D¹, Radoš M², Klarica M². Role of choroid plexus in cerebrospinal fluid hydrodynamics. *Neuroscience.* 2017;354:69-87.

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The classic hypothesis presents the cerebrospinal fluid (CSF) as the "third circulation," which flows from the brain ventricles through the entire CSF system to the cortical subarachnoid space to eventually be passively absorbed into the superior sagittal sinus through arachnoid granulations. The choroid plexus (CP) represents a key organ in the classic CSF physiology and a powerful biological pump, which exclusively secretes CSF. Thereby, the CP is considered to be responsible for CSF pressure regulation and hydrocephalus development. This article thoroughly analyzes the role of the CP in the CSF dynamics, presenting arguments in favor of the thesis that the CPs are neither biological pumps nor the main site of CSF secretion; that they do not participate in regulation of ICP/CSF pressure; are not the reason for the existence of hydrostatic pressure gradient in the CSF system and that this gradient is not permanent (disappeared in the horizontal position); and that they do not generate imagined unidirectional CSF circulation, hydrocephalus development and increased ICP/CSF pressure. The classic hypothesis cannot provide an explanation for these controversies but the recently formulated Bulat-Klarica-Orešković hypothesis can. According to this hypothesis, CSF production and absorption (CSF exchange) are constant and present everywhere in the CSF system, and although the CSF is partially produced by the CP, it is mainly formed as a consequence of water filtration between the capillaries and interstitial fluid.