

CLINICALLY ORIENTED MORPHOMETRIC STUDY
OF CERVICAL VERTEBRA IN INDIAN POPULATION

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Key words: cervical vertebra, decompression, internal
fixation, morphometry

Background. The anatomical dimensions of the cervical vertebrae have got neurosurgical implications.

Aim. The objective of the present study was to study the dimensions of the various parts of the cervical vertebrae (C1–C7) in Indian population.

Material and Methods. The present study included 237 cervical vertebrae, which included C1–C7. The dimensions of the different parts of the vertebrae like body, pedicle, spinous process, laminae and articular facets were measured. The age and gender of the vertebrae were unknown.

Results and Discussion. The present study has provided important data about the dimensions of cervical vertebrae. It was observed that the dimensions of the vertebral body was more for the lower cervical vertebra. The pedicle was larger in dimension for the C3 vertebra. The lamina was increasing in dimensions from C3 to C7. The length of the spinous process was highest for the vertebra prominens. The superior and inferior articular facets were decreasing in dimension towards the lower neck.

Conclusions. We believe that the data of the present study are important to the neurosurgical literature. The data will be enlightening to the operating spine surgeon during the procedures like internal fixation of the fracture vertebra and decompression procedure for the cervical spondylosis. It was observed that the racial variations seemed to exist and the implants should be devised as per the Indian data for the Indian patients.

OPTIMIZATION OF LAPAROSCOPIC ACCESSES
FOR REDUCTION OF POSTOPERATIVE WOUND COMPLICATIONS

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Key words: cholecystectomy, laparoscopy, anatomy,
complications

Aim. To identify surgical accesses for laparoscopic cholecystectomy which are associated with less risk of postoperative wound complications.

Material and Methods. The performed analysis of 180 clinical cases of the wound healing process

after laparoscopic cholecystectomy showed that there are certain areas on the abdominal wall which are safer in terms of the development of complications. The anatomical features of epigastric and paraumbilical regions which are most commonly used for trocar accesses differ. One of the significant differences is the density of lymphatic vessels in these anatomical zones. Infiltrates and suppuration, and subsequently postoperative hernias are more often observed in paraumbilical region.

Results and Discussion. Analysis of infectious complications in the field of surgical interventions showed that suppuration occurred in 11.7% patients (n=11) who underwent perianopic access for laparoscopic cholecystectomy in a container (total 94 patients), and only in 4.7% patients (n=4) after epigastric laparoscopic accesses (total 86 patients).

Conclusions. The epigastric region is anatomically more preferable for laparoscopic surgical access in terms of lower risk of postoperative wound complications.

ANATOMICAL MODELING OF SPONTANEOUS ESOPHAGEAL RUPTURE

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Key words: esophagus, rupture, spontaneous, pressure,
animals

Background. Spontaneous rupture of the esophagus (SRE) is a disease with an unfavorable prognosis of life that occurs in the unchanged wall of the esophagus with an increase in intraluminal pressure caused by vomiting.

Aim. Create an anatomical model of the SRE with a view to studying its mechanism.

Material and Methods. The simulation was performed on pigs weighing 18–20 kg. The first group—dead pigs were isolated by the removal of organs by the method of R. Virchow, then a clamp was placed on the gatekeeper, sealing the gastric outlet; second group — the pressure of the esophageal wall rupture was measured in dead animals without extracting the organocomplex; third group — living animals under the anesthesia of endotracheal analgesia.

For comparison, the pressure in the lumen of the esophagus and stomach was measured, which occurs with a gag reflex during diagnostic esophagogastros- copy (20 patients).

Results and Discussion. In the first group, when the water pressure reaches 0.5 ± 0.1 bar, there was a rupture of the small curvature of the stomach. The rupture of the wall of an isolated esophagus was obtained at a water pressure of 1.2 to 1.4 bar. The burst pressure of the esophagus in groups 2 and 3 was 0.9 ± 0.1 and 0.7 ± 0.1 bar. There was always a rupture along the left lateral wall of the over-diaphragmatic segment of the esophagus. The maximum intraluminal pressure in the gag reflex with FGD was an average of 0.15 bar, without a significant difference between the stomach and esophagus.

Conclusions. The rupture of the wall of the stomach occurs at a lower intraluminal pressure than the rupture of the wall of the esophagus. The place of rupture of the esophagus is always the same. Intraluminal pressure, which occurs during vomiting, cannot lead to rupture of the esophagus wall, since it is much less than the burst pressure.

PANCREATIC B-CELL TRANSPLANTATION AS ONE OF THE MOST PERSPECTIVE METHODS FOR TREATING TYPE I DIABETES MELLITUS

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Key words: diabetes mellitus, β -cells, transplantation, immunoprotection

Background. Type I diabetes mellitus is an autoimmune endocrine disease caused by pancreatic islets destruction, and insulin deficiency leading to chronic hyperglycemia. Nowadays new methods of diabetes treatment such as insulin-producing cells therapy are being actively developed.

Aim. The main goal of this work is to evaluate advantages, disadvantages and prospects of modern β -cells transplantation techniques.

Material and Methods. Analysis of scientific literature from Medline and Scopus databases for the last 20 years.

Results and Discussion. The strategy of obtaining β -cells includes differentiation of stem cells, reprogramming of mature specialized cells, autologous or donor cells isolation and xenotransplantation technology. The process is associated with a minor surgical intervention. Thus, the cells are injected into the portal vein through a catheter, installed under the ultrasound control. Islet cells can also be transplanted to the liver parenchyma, the pulp of the spleen, splenic artery, rectus abdominis, peritoneal cavity, greater omentum and even subcutaneously. The main problem of β -cells therapy is still the immunoprotection of transplants. Leading strategies include drug immunosuppression and macro- or microencapsulation using biodegradable scaffolds. However, trans-

plantation of autologous cells is more promising as it can remove necessity of immunoprotection at all.

Conclusions. High cost, complexity of implementation and uncertain consequences of such cell therapy create obstacles for its wide application in clinical practice. Existing methods do not allow the patient to get rid of the disease once and for all. Nevertheless, β -cells transplantation has great prospects as a technology that can radically change the approach to the treatment of diabetes.

EXPRESSION OF THE O-LINKED N-ACETYLGLUCOSAMINE CONTAINING EPITOPE H IN NORMAL MYOMETRIUM AND UTERINE SMOOTH MUSCLE CELL TUMORS

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Key words: tumor, cell, myometrium, uteri, immunohistochemistry

Aim. In the present study, we focused on uterine smooth muscle cell tumors and their adjacent normal myometrium to gain further insight into the expression patterns of epitope H in human tissues.

Material and Methods. The indirect immunoperoxidase method was applied using the mAbH and the monoclonal anti-cytokeratin 8 antibody (AbCK8) in 50 cases of typical uterine leiomyomas and in five of uterine leiomyosarcomas.

Results and Discussion. Epitope H showed: 1) intense immunohistochemical expression in 46% and moderate expression in 54% of uterine leiomyomas; 2) intense immunohistochemical expression in 40% and moderate expression in 60% of uterine leiomyosarcomas; 3) no difference in the immunohistochemical expression between leiomyomas and their adjacent myometrium and between leiomyosarcomas and their adjacent myometrium; 4) immunohistochemical expression of cytokeratin 8 was not detected in the normal and neoplastic smooth muscle cells; 5) Western immunoblotting showed that in the smooth muscle cells of the myometrium and leiomyomas, epitope H is localized in four polypeptides with molecular weights of 100, 61, 59, and 54 kDa, and 6) Western immunoblotting did not detect cytokeratin 8 in the normal and neoplastic smooth muscle cells.

Conclusions. The present results indicate fluctuations of the epitope expression levels in uterine smooth muscle cell tumors and their adjacent myometrium. Furthermore, indicated that cytokeratin 8, without being present in the cells of the myome-