TWO TYPES OF THE COLLAGEN MEMBRANES FOR THE PLASTIC RESTORATION OF ARTICULAR CARTILAGE DEFECTS IN THE EXPERIMENT

Afanasyevskaya E. V. [1], *Medvedeva E. V.* [1], *Gazimieva B. M.* [1], *Kurenkova A. D.* [1], *Kytko O. V.* [2], *Panyushkin P. V.* [2], *Istranov L. P.* [1], *Istranova E. V.* [1], *Shekhter A. B.* [1], *Lichagin A. V.* [3], *Chagin A. S.* [1], *Telpukhov V. I.* [1, 2]

[1] Institute for Regenerative Medicine, [2] Department of Operative Surgery and Surgical Anatomy, [3] Department of Trauma, Orthopedics and Disaster Surgery, Sechenov First Moscow State Medical University, Moscow, Russia
el.afanasyevskaya@gmail.com

Key words: *plastic restoration, cartilage, injuries, collagen membrane*

Background. Articular cartilage injuries are common in the field of orthopedics. Cartilage has a poor regenerative capacity. Accordingly, trauma-associated cartilage defects are often treated surgically by covering with synthetic collagen membranes.

Aim. To compare the regenerative capacities of two types of synthetic collagen membranes utilized in a rat model of full thickness defect.

Material and Methods. Full thickness cartilage defects were made surgically in patellofemoral grove and covered with one of the two collagen membranes: Chondro-Gide® (Switzerland) or Chondrotek (Russia). Control group was left without coverage. The International Cartilage Repair Society (ICRS) score and histological analysis were carried out in 2 and 4 months after implantation.

Results and Discussion. Both collagen membranes have a positive effect on cartilage repair since the thickness of newly formed tissue was significantly higher than in control group. Formation of fibrocartilage was observed in all groups. No significant difference was observed between two membranes repair capacity.

Conclusions. Both collagen membranes have comparable repair capacity and both failed to facilitate formation of hyaline cartilage.

ANTHROPOMETRIC EVALUATION OF BODY COMPOSITION AND FOOT ARCHES OF AFRICAN AND EUROPEAN MEN

Akambase J. A., Kokoreva T. V., Gurova O. A.

Peoples' Friendship University of Russia, Moscow, Russia
atulebire2006@gmail.com

Key words: *foot, body, composition, anthropometric features*

Aim. The aim of this article was to assess racial anthropometric differences of the foot and body composition, and the effect of the later on foot arch considering the male gender in this present research since a similar article which is submitted to be published was focused on the female gender.

Material and Methods. A total of 124 feet of young men belonging to the African and European ethnic groups were examined based on foot length (FL), foot width, length of medial longitudinal arch (LMLA), length of lateral longitudinal arch (LLLA), width of anterior transverse arch (WATA), and width of posterior transverse arch (WPTA), shtriter index (SI), and flattening index, (FI) and the relationship between Body Mass Index (BMI) and foot arches were also studied. All the parameters were measured using stadiometer and plantograph except shriter and flattening index were calculated. T-test and Excel were used to statistically analyse the data.

Results and Discussion. After T-testing our analysis showed a p-value <0.05 for BMI, height, LMLA, LLLA, WPTA, FI, SI among the two races. Regression analysis between BMI and the following parameters: LMLA, WPTA, SI, and FI, recorded a p-value <0.05 except for LMLA. According to Shtriter Index African men recorded 25% High-Arched foot and 53% Flatfoot whilst European men recorded 50% High-Arched foot and 33% Flat foot.

Conclusions. In conclusion, the present study has shown some significant differences in body composition and anthropometric features of foot among men from Europe and Africa origin.

ALGORITHMIZATION OF STUDY IN ANATOMY RESEARCH

Akhmedov O. H., Maleev Yu. V.

N. N. Burdenko Voronezh State Medical University of Ministry of Health of Russia, Voronezh, Russia
ymaleev10@yandex.ru

Key words: *anthropometry, anthropometric landmarks, lower limb*

Aim. Develop an algorithm for the investigation of lower limb (LL) on the basis of constant segmented bone reference points.

Material and Methods. The study was performed on non-fixed corpses of 2 women and 6 men. The hip and shin are conventionally divided by 10% in length, and the knee joint area by 33% strictly parallel. The length of the LL is the distance from the clearly palpable large trochanter of the femur to the apex of the lateral ankle. The proximal landmark in determining the length of the tibia is the line drawn from the fibula to the point on the inner surface of the medial condyle of the tibia. The line connecting the centers of the proximal and distal boundaries was the integral length of the tibia, which allows us to take into account both the length of tibia and fibula. The proximal landmark is the line connecting the epicondyle of the femur. On the hip, a distal reference point was used to connect the epicondyle of the femur.

Results and Discussion. The proximal lateral reference point of the femur length is the apex of the large trochanter of the femur, from which the line parallel to the linea interepycondylaris femoris is medially drawn. Thus, new methodological approaches have been developed, proposed and introduced in the selection of constant anthropometric points, a rational sequence of LL measurements has been tested.

Conclusions. The developed algorithm is created at the junction of 3D modeling and printing technologies taking into account the functional biomotorics of LL.

PRESERVATION OF BIOLOGICAL SPECIMENS FOR HIGHER AND POSTGRADUATE MEDICAL EDUCATION

Akopov A., Ivanov V.

Department of Clinical Anatomy and Operative Surgery, I. P. Pavlov First State Medical University, St. Petersburg, Russia
akopovand@mail.ru

Key words: *anatomy; operative surgery; anatomy specimens; preservation*

Background. Modern educational anatomical specimens have some requirements — high quality, practicality, demonstrativeness, durability, visibility, natural properties, minimal toxicity.

Aim. The trend of recent years — the growing number of students in medical high schools and the growing interest of graduate surgeons to work on biological tissues (cadavers).

Material and Methods. The basis of the dissection in teaching normal anatomy is the use of a material conservated with a formalin-glycerol solution containing 5–10% formalin. Plastination specimens are particularly suitable for practical exercises, examinations; they remain shape, durable, odorless and non-toxic. When carrying out the practical part of the exam, students' Olympiads in anatomy, they use specimens prepared according to the non formalin (latex) method. The last two methods of conservation are convenient for creating expositions of educational museums, enlightening secondary school students, a broad amateur audience.

Results and Discussion. To conduct classes on topographic anatomy, the specimens made by the method of polymeric embalming are used, which makes it possible to create transparent cuts of previously frozen biological objects, frontal and sagital, the mutual arrangement of organs remains. It becomes popular to «soft» pour cadaver material using alcohol solutions, which allows keeping the shape and topography of organs, elasticity and high mobility of joints. Preliminary injection of dyes is indicated if necessary to visualize the blood or lymphatic system. Such material is used, first of all, for postgraduate training of surgeons with the purpose of acquiring practical skills. The importance of freezing natural biological objects with a subsequent slow thawing just before the planned event also remains significant, which allows working on natural tissues.

Conclusions. A full range of educational services in the aspect of normal anatomy and operative surgery at university and postgraduate education requires the use of various methods of preparation and conservation of biological specimens.

COMBINED VARIABILITY OF THE ANTERIOR CRANIAL FOSSA WITH ORBITAL FORMS IN THE EXTREME TYPES OF THE BASE OF THE SKULL

Aleshkina O. Yu., Anisimova E. A., Zagorovskaya T. M., Khurchak Yu. A., Bikbaeva T. S., Polkovova I. A., Konnova O. V.*

V. I. Razumovsky Saratov State Medical University, Saratov, Russia
* aleshkina_ou@mail.ru

Key words: *flexybasilar, platybasilar craniotypes*

Aim. To identify the combined variability of the anterior cranial fossa with orbital forms in flexi- and platybasilar craniotypes.

Material and Methods. On 100 skulls of adults the method of craniotopometry to study the shape of the anterior cranial fossa according to the magnitude of the longitudinally transverse index, the shape of the orbit by the orbital index.

Results and Discussion. In flexibasilar craniotypes, the broad shape of the anterior cranial fossa is combined with medium-high (64.2%) and medium deep (42.9%), low (21.4%), shallow (35.7%), high (14.3%) and deep (21.4%) orbital forms; mid-wide fovea is combined with medium-high (80%), shallow (60%), high, low (10%), deep, middle-deep (20%); a narrow shape of the fossa in 100% of cases — with medium-high, deep, medium-deep (50%). In platybasilar craniotypes the wide form of the fossa is combined with medium-high (64.3%) and medium-deep (42.9%), shallow (35.7%), low (21.4%), deep (21.4%), high (14.3%); medium-wide fossa is combined with medium-high (80%) and shallow orbit (60%), deep (20%), high (10%), medium-deep (20%), low (10%); the narrow shape of the fovea is 100% combined with medium-high and medium-deep (50%), deep (50%) forms of the orbit.

Conclusions. The results of the study are an indispensable theoretical basis for developing the tactic of the stereotactic transorbital approach to the pathological processes of the anterior cranial fossa.