SPONDYLECTOMY FOR SPINAL NEOPLASMS

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The results of treatment of 27 patients with tumors of various parts of the spine, who underwent two-stage surgical technology of spondylectomy, are presented. There were 12 males and 15 females aged 15 to 68 years. The proposed surgical methods of two-stage spondylectomy for cervical, thoracic, lumbar and sacral neoplasms can increase the rehabilitation potential, optimize the prognosis and improve the quality of life of a complex category of patients.

Key words: spine, neoplasms, surgical interventions, spondylectomy, surgical technologies.

Introduction

Radical surgical interventions performed for spinal neoplasms are among the most complex surgical technologies [1, 4]. It is necessary to take into account the localization, degree of damage to the vertebral bone structures, deformity of the spinal canal, morphological structure of the tumor, duration of the disease, and the presence of neurological disorders. Such operations as spondylectomy (SE) can be performed in specialized centers equipped with the necessary equipment, having qualified surgeons, anesthesiologists-resuscitators, etc. In recent decades, there have been works devoted to radical operations for spinal tumors, primarily benign and primary malignant, as well as in cases of single vertebral metastases. Anatomical and surgical classifications WBB (1997) and Totya (2001) have been proposed, which objectively demonstrate the possibility of radical removal of the tumor-affected vertebra even with total spread to the anterior and posterior structures [5, 8, 10]. First of all, this applies to neoplasms of the thoracic and lumbar spine. In recent years, there have been publications about successful spondylectomy of the cervical vertebrae at the C3-C7 level. Most authors divide the surgical intervention of SE into two stages, which can be performed simultaneously or sequentially [6, 7, 9].

Materials and methods

The results of treatment of 27 patients with spinal tumors operated on in the Republican Spinal Center of the State Institution of the Russian National Research Center for Spondylectomy in 1998-2007, who underwent two-stage surgical technology of spondylectomy, were analyzed. There were 12 males and 15 females. The patients ranged in age from 15 to 68 years. The median age was 45.2 years. Of these, there were 11 patients with cervical spine tumors; 8 patients with thoracic spine tumors; 7 patients with lumbar spine tumors; and one patient underwent two-stage tumor removal technology for sacral tumors [2, 3].

The structure of patients with spinal tumors by nosological forms is shown in Table 1.

As can be seen from Table 1, among the primary benign neoplasms, the most common were giant cell tumors (8 cases), osteoblastoma (3 cases). Solitary or multiple myeloma accounted for the majority of primary malignancies (7 cases).

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Single vertebral metastases comprised 5 cases: 1-with a lesion of the thoracic vertebra, 4-with a lesion of the lumbar vertebrae.

Results and discussion

The diagnostic algorithm included performing an X-ray examination of the spine in two projections, магнитнорезонанснойmagnetic resonance imaging or computed X-ray tomography for all patients. When planning surgical interventions for cervical spine tumors, computer angiography of brachiocephalic vessels with the study of the state of vertebral arteries was mandatory. A significant paravertebral spread of the pathological process within the thoracic and lumbar regions was an indication for aortography and angiography of the iliac vessels. Osteoscintigraphy made it possible to determine the degree of neoplasm activity and exclude multiple lesions, especially when malignant tumors metastasize to the spine [1, 2, 4]. Spiral X-ray computed tomography (CRCT) is recognized as a highly informative method for diagnosing bone cancer. Thanks to the multiplanar reconstruction program, which provides simultaneous visualization of the studied object in three different planes, as well as the ability to measure density characteristics in absolute units on the Hounsfield scaleХаунсфил, the SRCT method makes it possible to reliably assess the localization of the tumor process. The most important parameters at the stage of preoperative planning of the intervention are the prevalence of damage within the bone structures of the vertebra, as well as the presence and degree of involvement of surrounding паравертеб-ральных, а также paravertebral and introvertebral formations. A prerequisite for preoperative planning of SE is the correlation of IPT data with theanatomicaland surgical classifications WBB and Totca.

The morphological diagnosis was verified both by preliminary biopsy data and by the results of examination of tumor tissues removed during surgery [2, 3].

The developed and implemented methods of surgical interventions with спондилэктомииspondylectomy in 27 patients are shown in Table 2.

In case of localization of neoplasms in the cervical spine, a one - stage two-stage spondylectomy was performed in one case. After removal of the giant cell tumor of the C5 vertebra, bone grafting with an autograft and interbody fusion with a titanium plate were performed. Separate two-stage SE in combination with bone grafting and metal osteosynthesis was used in three patients. остеобластомеBone grafting was performed for NW osteoblastomaсолитарной мие-ломе, and two patients underwent spinal fusion with a porous titanium implant and a titanium plate for solitary fibroblastoma. Inти the first cases of extensive resections of the cervical vertebral bodies, we proposed combined fusion with bone grafts or implants in combination with extra-focal stabilization of the cervical spine with a halo device.

On the thoracic spine, 4 patients underwent separate two-stage removal of the neoplasm with bone grafting and metal osteosynthesis. Surgical defects in the thoracic vertebral bodies were replaced with bone grafts orimplants made of porous titanium in combination with posterior fusion with a universal transpedicular fixator.

One patient with prostate cancer metastasis in the body of the Th1vertebra underwent combined fusion with fixation in a halo device.

Two-stage spondylectomy was performed simultaneously for one patient in the lumbar spine осуществлена одномоментно, а б-, and separately for two patients. The first stage was performed from the posterior surgical approach, the second-from the anterior or anterolateral one. Surgical defects in the lumbar vertebral bodies were replaced with bone grafts or implants made of porous titanium in combination with interbody спондило-дезом fusion with titanium plates and mandatory transpedicular fixation of adjacent vertebral-motorных segments.

One patient with giant нейрофибромойsacral neurofibroma in segments SS1-S2underwent two-stage separate removal of the neoplasm with metal osteosynthesis of the lumbosacral region. A variant of transpedicular insertion of screws into the lower lumbar vertebrae and into the lateral masses of the sacrum at the level of S1-S2 was used.

The results of treatment were tracked over a period of 2 to 5 years. In all cases, complete spinal fusion of the operated vertebral-motor segments was formed. Loss of correction with the development of kyphotic deformity in the surgical area without pronounced clinical manifestations was observed in three patients. In two cases, at the request of patients, the transpedicular fixator was removed three years after the operation.

Conclusions

1. Timely establishment of a morphological diagnosis, study of the structure and nature of a spinal tumor allows predicting the course of the postoperative period, planning the timing and sequence of radiation and chemotherapy.

2. Indications for the surgical stage of treatment of primary malignant and metastatic spinal tumors are determined after a comprehensive examination in an oncological hospital, morphological verification of the neoplasm is mandatory.

3. In the preoperative planning of spondylectomy, the most important factors are the degree of tumor prevalence in the vertebral tissues, the involvement of paravertebral and intracanal spaces, the degree of involvement of the spinal cord and its elements, large vascular trunks in the pathological process, and confirmation of a single lesion in spinal metastases. These data should be correlated with the developed anatomical and surgical systems WBB, Tomita.

4. Comprehensive examination of patients with spinal neoplasms allows us to determine the possibility of radical removal of the tumor using two-stage spondylectomy technologyспондилэктомии.

5. In the postoperative period, patients should be monitored by an oncologist, orthopedic traumatologist, neurosurgeon, and, if necessary, receive combined or complex treatment in cancer hospitals.

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Thus, the two-stage methodsof spondylectomy for cervical, thoracic, lumbar and sacral neoplasms developed and performed at the Republican Center for Spine Surgery of the Russian National Research Center of Traumatology and Orthopedicsmake it possible to increase the rehabilitation potential, optimize the prognosis and improve the quality of life of a complex category of patients.

Literature

1. A., Khamidov O., and Shodmanov F. J. 2023. “Computed Tomography and Magnetic Resonance Imaging Play an Important Role in Determining the Local Degree of Spread of Malignant Tumors in the Organ of Hearing”. Central Asian Journal of Medical and Natural Science 4 (3), 929-39. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1600.
2. Abdurakhmanovich, K. O., & ugli, G. S. O. (2022). Ultrasonic Diagnosis Methods for Choledocholithiasis. Central Asian Journal Of Medical And Natural Sciences, 3(2), 43-47.
3. Abdurakhmanovich, K. O., & ugli, G. S. O. (2022). Ultrasound Diagnosis of the Norm and Diseases of the Cervix. Central Asian Journal Of Medical And Natural Sciences, 3(2), 58-63.
4. Akbarov S. et al. VALUE OF US AND DOPPLEROMETRY IN CHRONIC PYELONEPHRITIS OF PREGNANT WOMEN //Yangi O'zbekiston talabalari axborotnomasi. – 2023. – Т. 1. – №. 2. – С. 26-29.
5. Akhmedov YA, Ataeva SKh, Ametova AS, Bazarova SA, Isakov HKh THE HISTORY OF THE DEVELOPMENT OF RADIATION DIAGNOSTICS. Web of scientist: International scientific research journal. 2021;2:34-42.
6. Akhmedov YA, Rustamov UKh, Shodieva NE, Alieva UZ, Bobomurodov BM Modern Application of Computer Tomography in Urology. Central Asian journal of medical end natural sciences. 2021;2(4):121-125.
7. Alimdjanovich, R.J., Obid , K., Javlanovich, Y.D. and ugli, G.S.O. 2022. Advantages of Ultrasound Diagnosis of Pulmonary Pathology in COVID-19 Compared to Computed Tomography. Central Asian Journal of Medical and Natural Science. 3, 5 (Oct. 2022), 531-546.
8. Alimdjanovich, Rizayev Jasur, et al. "Start of Telemedicine in Uzbekistan. Technological Availability." Advances in Information Communication Technology and Computing: Proceedings of AICTC 2022. Singapore: Springer Nature Singapore, 2023. 35-41.
9. Amandullaevich A. Y., Abdurakhmanovich K. O. Organization of Modern Examination Methods of Mammary Gland Diseases //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 5. – С. 560-569.
10. Ataeva SKh, Ravshanov ZKh, Ametova AS, Yakubov DZh Radiation visualization of chronic joint diseases. Central Asian journal of medical end natural sciences. 2021;2(2):12-17
11. Babajanovich K. Z., Abdurakhmanovich K. O., Javlanovich Y. D. Ultrasound and MSCT as the Next Step in the Evolution of the Examination of Patients with Ventral Hernias //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 5. – С. 583-591.
12. Baxıtjanovich, Bekjanov Nursulton. "QARAQALPAQSTAN RESPUBLIKASI AWIL XOJALIG’I TOPIRAQLARIN EKOLOGIYALIQ BAHALAW." Galaxy International Interdisciplinary Research Journal 10.10 (2022): 397-399.
13. Gaybullaev S. O., Fayzullayev S. A., Khamrakulov J. D. Cholangiocellular Cancer Topical Issues of Modern Ultrasound Diagnosis //Central Asian Journal of Medical and Natural Science. – 2023. – Т. 4. – №. 3. – С. 921-928.

14. Hamidov OA, Diagnostics of injuries of the soft tissue structures of the knee joint and their complications. European research. Moscow. 2020;1(37):33-36.
15. I., Davranov I., and Uteniyazova G. J. 2023. "Koronavirus Diagnostikasida O'pkani Ktsi: Qachon, Nima Uchun, Qanday Amalga Oshiriladi?". Central Asian Journal of Medical and Natural Science 4 (3), 947-55. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1602.
16. Kadirov J. F. et al. NEUROLOGICAL COMPLICATIONS OF AIDS //Journal of new century innovations. – 2022. – T. 10. – №. 5. – C. 174-180.
17. Khamidov O. A., Shodmanov F. J. Computed Tomography and Magnetic Resonance Imaging Play an Important Role in Determining the Local Degree of Spread of Malignant Tumors in the Organ of Hearing //Central Asian Journal of Medical and Natural Science. – 2023. – T. 4. – №. 3. – C. 929-939.
18. Khamidov OA, Akhmedov YA, Ataeva SKh, Ametova AS, Karshiev BO Role of Kidney Ultrasound in the Choice of Tactics for Treatment of Acute Renal Failure. Central Asian journal of medical end natural sciences. 2021;2(4):132-134
19. Khamidov OA, Akhmedov YA, Yakubov DZh, Shodieva NE, Tukhtaev TI DIAGNOSTIC POSSIBILITIES OF USES IN POLYKYSTOSIS OFKIDNEYS. Web of scientist: International scientific research journal. 2021;2(8):27-33
20. Khamidov OA, Ataeva SKh, Ametova AS, Yakubov DZh, Khaydarov SS A Case of Ultrasound Diagnosis of Necrotizing Papillitis. Central Asian journal of medical end natural sciences. 2021;2(4):103-107
21. Khamidov OA, Ataeva SKh, Yakubov DZh, Ametova AS, Saytkulova ShR ULTRASOUND EXAMINATION IN THE DIAGNOSIS OF FETAL MACROSOMIA. Web of scientist: International scientific research journal. 2021;2(8):49-54
22. Khamidov OA, Khodzhanov IYu, Mamasoliev BM, Mansurov DSh, Davronov AA, Rakhimov AM The Role of Vascular Pathology in the Development and Progression of Deforming Osteoarthritis of the Joints of the Lower Extremities (Literature Review). Annals of the Romanian Society for Cell Biology, Romania. 2021;1(25):214 – 225
23. Khamidov OA, Mirzakulov MM, Ametova AS, Alieva UZ Multispiral computed tomography for prostate diseases. Central Asian journal of medical end natural sciences. 2021;2(2):9-11
24. Khamidov OA, Normamatov AF, Yakubov DZh, Bazarova SA Respiratory computed tomography. Central Asian journal of medical end natural sciences. 2021;2(2):1-8
25. Khamidov OA, Urozov UB, Shodieva NE, Akhmedov YA Ultrasound diagnosis of urolithiasis. Central Asian journal of medical end natural sciences. 2021;2(2):18-24
26. Khamidov OA, Yakubov DZh, Alieva UZ, Bazarova SA, Mamaruziev ShR Possibilities of Sonography in Differential Diagnostics of Hematuria. Central Asian journal of medical end natural sciences. 2021;2(4):126-131
27. Khamidov OA, Yakubov DZh, Ametova AS, Bazarova SA, Mamatova ShT Application of the Ultrasound Research Method in Otorhinolaryngology and Diseases of the Head and Neck Organs. International Journal of Development and Public Policy. 2021;1(3):33-37
28. Khamidov OA, Yakubov DZh, Ametova AS, Turdumatov ZhA, Mamatov RM Magnetic Resonance Tomography in Diagnostics and Differential Diagnostics of Focal Liver Lesions. Central Asian journal of medical end natural sciences. 2021;2(4):115-120
29. Khamidov Obid Abdurakhmanovich, Davranov Ismoil Ibragimovich, Ametova Alie Servetovna. (2023). The Role of Ultrasound and Magnetic Resonance Imaging in the Assessment of Musculo-Tendon Pathologies of the Shoulder Joint. International Journal of Studies in Natural and Medical Sciences, 2(4), 36–48. Retrieved from https://scholarsdigest.org/index.php/ijsnms/article/view/95
30. Khasanova Diyora Zafarjon kizi, Khamidov Obid Abdurakhmonovich and Juraev Kamoliddin Danabaevich 2023. SYMPHYSIOPATHY AND PREGNANCY. "Conference on Universal Science Research 2023". 1, 2 (Feb. 2023), 55–60.

31. Khudayberdiyevich Z. S. et al. Possibilities and Prospects of Ultrasound Diagnostics in Rheumatology //Central Asian Journal of Medical and Natural Science. – 2022. – Т. 3. – №. 5. – С. 570-582.
32. Mambetullaeva, S. M., G. N. Utemuratova, and S. Sh Yeshchanova. "ECOLOGICAL TRANSFORMATIONS IN THE SOUTHERN ARAL SEA REGION AS A FACTOR OF POPULATION DYNAMICS (ON THE EXAMPLE OF RHOMBOMYS OPIMUS AND ONDATRA ZIBETHICA)." Annals of the Romanian Society for Cell Biology (2021): 13428-13436.
33. N., Nurmurzayev Z., Abduqodirov Kh. M., and Akobirov M. T. 2023. "Transabdominal Ultrasound for Inflammatory and Tumoral Diseases Intestine: New Possibilities in Oral Contrasting With Polyethylene Glycol". Central Asian Journal of Medical and Natural Science 4 (3), 973-85. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1606.
34. Nurmurzayev Z.N.; Suvonov Z.K.; Khimmatov I.Kh. Ultrasound of the Abdominal Cavity. JTCOS 2022, 4, 89-97.
35. O., Gaybullaev S., Fayzullayev S. A., and Khamrakulov J. D. 2023. "Cholangiocellular Cancer Topical Issues of Modern Ultrasound Diagnosis". Central Asian Journal of Medical and Natural Science 4 (3), 921-28. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1599.
36. Obid, K., Servetovna, A. A., & Javlanovich, Y. D. (2022). Diagnosis and Structural Modification Treatment of Osteoarthritis of the Knee. Central Asian Journal of Medical and Natural Science, 3(5), 547-559.
37. P., Kim T., and Baymuratova A. C. 2023. "Fast Technology for Ultrasonic Diagnosis of Acute Coleculosis Cholecystitis". Central Asian Journal of Medical and Natural Science 4 (3), 940-46. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1601.
38. Rustamov UKh, Shodieva NE, Ametova AS, Alieva UZ, Rabbimova MU US-DIAGNOSTICS FOR INFERTILITY. Web of scientist: International scientific research journal. 2021;2(8):55-61
39. Rustamov UKh, Urinboev ShB, Ametova AS Ultrasound diagnostics of ectopic pregnancy. Central Asian journal of medical end natural sciences. 2021;2(2):25-28
40. S., Usarov M., Turanov A. R., and Soqiev S. A. 2023. "Modern Clinical Capabilities of Minimally Invasive Manipulations under Ultrasound Control". Central Asian Journal of Medical and Natural Science 4 (3), 956-66. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1604.
41. Usarov M.Sh, Otakulov Z.Sh and Rakhmonkulov Sh. H. 2022. Contrast-enhanced ultrasound in the differential diagnosis of focalnodular hyperplasia and hepatocellular liver adenoma. Journal the Coryphaeus of Science. 4, 4 (Dec. 2022), 70–79.
42. Yakubov , J., Karimov , B., Gaybullaev , O., and Mirzakulov , M. 2022. Ultrasonic and radiological picture in the combination of chronic venous insufficiency and osteoarthritis of the knee joints. Academic Research in Educational Sciences. 5(3), pp.945–956.
43. Yakubov D. Z., Gaybullaev S. O. The diagnostic importance of radiation diagnostic methods in determining the degree of expression of gonarthrosis //UZBEK JOURNAL OF CASE REPORTS. – С. 36.
44. Yakubov D.J., Turanov A.R. and Baymuratova A.C. 2022. Possibilities of contrast-enhanced ultrasound tomography in the diagnosis of metastatic liver lesions in patients with cervical cancer. Journal the Coryphaeus of Science. 4, 4 (Dec. 2022), 80–88.
45. Yakubov Doniyor Javlanovich, Juraev Kamoliddin Danabaevich, Gaybullaev Sherzod Obid ugli, and Samiev Azamat Ulmas ugli. 2022. "INFLUENCE OF GONARTHROSIS ON THE COURSE AND EFFECTIVENESS OF TREATMENT OF VARICOSE VEINS". Yosh Tadqiqotchi Jurnali 1 (4):347-57.
46. Yeshchanova S. SH. and Panaeva A. N. 2022. CULTIVATION OF PUMPKIN CUCURBITA PEPO VARIETIES IN THE SOIL-CLIMATIC CONDITIONS OF

KARAKALPAKSTAN. Galaxy International Interdisciplinary Research Journal. 10, 10 (Oct. 2022), 451–453.
47. Yeshchanova, S. "SH., Mambetullaeva SM Dynamics of Demographic Indicators during the Population Cycle Microtus Ilaeus in the Low of the Amudarya." *International Journal of Science and Research (IJSR)* 8.12 (2019): 911-912.
48. Yusufzoda Hosiyat Turon kizi, Khamidov Obid Abdurakhmonovich and Juraev Kamoliddin Danabaevich 2023. DIAGNOSIS OF CHANGES IN PREGNANT WOMEN WITH VULVOVAGINITIS. "Conference on Universal Science Research 2023". 1, 2 (Feb. 2023), 51–55.
49. Z., Umarkulov Z., Khakimov M. B., and Suvonov Z. K. 2023. "Ultrasound Diagnostics and Diapeutics of Focal Liquid Lesions of the Liver". Central Asian Journal of Medical and Natural Science 4 (3), 986-94. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1607.
50. Ахмедов Якуб Амандуллаевич; Гайбуллаев Шерзод Обид угли; Хамидова Зиёда Абдивахобовна. МРТ В СРАВНЕНИИ С ДИАГНОСТИЧЕСКОЙ АРТРОСКОПИЕЙ КОЛЕННОГО СУСТАВА ДЛЯ ОЦЕНКИ РАЗРЫВОВ МЕНИСКА. Tadqiqotlar 2023, 7, 105-115.
51. Гайбуллаев Ш., Усаров М., Далерова М. НОРМАЛЬНЫЕ УЛЬТРАЗВУКОВЫЕ РАЗМЕРЫ ЖЕЛЧНОГО ПУЗЫРЯ И ОБЩЕГО ЖЕЛЧНОГО ПРОТОКА У НОВОРОЖДЕННЫХ //Involta Scientific Journal. – 2023. – Т. 2. – №. 1. – С. 142-148.
52. Ешчанова, Сайёра Шукурулла Кизи. "ОЦЕНКА ВЛИЯНИЯ ВНЕШНИХ И ВНУТРИПОПУЛЯЦИОННЫХ ФАКТОРОВ В ФОРМИРОВАНИЕ ДИНАМИКИ ЧИСЛЕННОСТИ И СТРУКТУРЫ ПОПУЛЯЦИИ MICROTUS ILAEUS." Universum: химия и биология 5-1 (95) (2022): 37-41.
53. Жавланович, Я. Д., Амандуллаевич, А. Я., Зафаржонович, У. З., & Павловна, К. Т. (2023). Мультипараметрическая МРТ В Диагностике Рака Предстательной Железы. Central Asian Journal of Medical and Natural Science, 4(2), 577-587. https://doi.org/10.17605/OSF.IO/MQDHP
54. Кадиров Ж. Ф. и др. МАГНИТНО-РЕЗОНАНСНАЯ ТОМОГРАФИЧЕСКАЯ ОЦЕНКА ПОРАЖЕНИЙ ЦЕНТРАЛЬНОЙ НЕРВНОЙ СИСТЕМЫ У БОЛЬНЫХ, ИНФИЦИРОВАННЫХ ВИРУСОМ ИММУНОДЕФИЦИТА ЧЕЛОВЕКА //Journal of new century innovations. – 2022. – Т. 10. – №. 5. – С. 157-173.
55. Нурмурзаев, З. Н., Жураев, К. Д., & Гайбуллаев, Ш. О. (2023). ТОНКОИГОЛЬНАЯ АСПИРАЦИОННАЯ ЦИТОЛОГИЯ ПОД УЛЬТРАЗВУКОВЫМ КОНТРОЛЕМ В ДИАГНОСТИКЕ ЗАБРЮШИННЫХ ОБРАЗОВАНИЙ: ИССЛЕДОВАНИЕ 85 СЛУЧАЕВ. Academic Research in Educational Sciences, 4(4), 126–133.
56. угли, А.С.Н., Хамидович, Р.Ш. and Данабаевич, Ж.К. 2023. Кость При Остеоартрите: Визуализация. Central Asian Journal of Medical and Natural Science. 4, 3 (Jun. 2023), 895-905.
57. угли, Н. З. Н., Шухратович, У. М., Хуршедовна, А. С. and Фаёзович, В. Ф. (2023) "Роль Ультразвука В Оценке Повреждения Мениска", Central Asian Journal of Medical and Natural Science, 4(2), pp. 588-595. doi: 10.17605/OSF.IO/M5HZP.
58. угли, Химматов Ислом Хайрулло, Сувонов Зуфар Кахрамон угли, and Умаркулов Забур Зафаржонович. 2023. "Визуализация Множественной Миеломы". Central Asian Journal of Medical and Natural Science 4 (3), 906-16. https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/1597.
59. Хамидов , О. , Гайбуллаев , Ш. и Давранов , И. 2023. СРАВНЕНИЕ РЕЗУЛЬТАТОВ УЗИ И МРТ В ДИАГНОСТИКЕ ПОВРЕЖДЕНИЙ МЕНИСКА КОЛЕННОГО СУСТАВА. Евразийский журнал медицинских и естественных наук. 3, 4 (апр. 2023), 176–183.
60. Хамидов О. А., Гайбуллаев Ш. О., Хакимов М. Б. ОБЗОР МЕТОДОВ ОБРАБОТКИ ИЗОБРАЖЕНИЙ ДЛЯ ДИАГНОСТИКИ ПАТОЛОГИИ ГОЛОВНОГО МОЗГА:

ПРОБЛЕМЫ И ВОЗМОЖНОСТИ //Journal of new century innovations. – 2022. – Т. 10. – №. 5. – С. 181-195.

61. Хамидов О. А., Гайбуллаев Ш. О., Хомидова Д. Д. РОЛЬ УЛЬТРАЗВУКА И МАГНИТНО-РЕЗОНАНСНОЙ ТОМОГРАФИИ В ОЦЕНКЕ МЫШЕЧНО-СУХОЖИЛЬНЫХ ПАТОЛОГИЙ ПЛЕЧЕВОГО СУСТАВА //Uzbek Scholar Journal. – 2023. – Т. 12. – С. 125-136.
62. Хамидов О.А. Оптимизация лучевой диагностики повреждений мягкотканных структур коленного сустава и их осложнений, Американский журнал медицины и медицинских наук. 2020;10 (11):881-884. (In Russ.)
63. Хамидов, О. А., Жураев, К. Д., & Муминова, Ш. М. (2023). СОНОГРАФИЧЕСКАЯ ДИАГНОСТИКА ПНЕВМОТОРАКСА. *World scientific research journal*, *12*(1), 51-59.
64. Ходжибеков М.Х., Хамидов О.А. Обоснование ультразвуковой диагностики повреждений внутрисуставных структур коленного сустава и их осложнений. 2020;3(31):526-529. (In Russ.)
65. Юсуфзода Х. и др. ОПТИМАЛЬНЫЕ МЕТОДЫ ДИАГНОСТИКИ СИНДРОМА МИРИЗЗИ //Yangi O'zbekiston talabalari axborotnomasi. – 2023. – Т. 1. – №. 2. – С. 21-25.
66. Якубов Д. Д., Давранов И. И., Шодикулова П. Ш. ХАРАКТЕРИСТИКИ МСКТ И ДИАГНОСТИЧЕСКАЯ ЦЕННОСТЬ COVID-19 ПРИ БЕРЕМЕННОСТИ //Journal of new century innovations. – 2023. – Т. 22. – №. 1. – С. 165-176.
67. Якубов Д. Ж., Гайбуллаев Ш. О. Влияние посттравматической хондропатии на функциональное состояние коленных суставов у спортсменов. Uzbek journal of case reports. 2022; 2 (1): 36-40. – 2022.

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