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The role of artificial intelligence and digital planning in facial surgery

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Annotation:
In this article, the role of artificial intelligence (SI) and digital planning technologies will analyze in the modern hundred central surgeries. Diagnosis using SI in the study will consider opportunities to improve the operation, surgery accuracy, and ensure sick security. Methods of accurate planning of a hundred structures through 3D modeling, virtual reality and robotable systems will also be illuminated. Featal surgical application of artificial intelligence will not only increase the effectiveness of the surgery, but also provide an individual approach, serve to speed up the rehabilitation process. The article reveals new health approaches by digital surgery.
Keywords: Small Intelligence, digital planning, hundred surgery, 3D modeling, virtual reality, medicine technology, innovations in health, operational technology, health.

It is important to clearly identify complex anatomical structures in the field of central surgery and effective planning of surgery. In recent years, artificial intelligence (artificial intelligence) and digital planning technologies create new opportunities in medicine. These technologies help surgeons to identify diseases, survey process in advance and better understand complications in the face structure. Therefore, artificial recovery and digital planning are growing in central surgery. In this case, these new technologies are applied in the face of the face surgery, the advantages and prospects.

Application of artificial intelligence in the face surgery. Artificial Intelligence, in particular, are radically changing the process of diagnostic and planning in the field of medicine. The SI algorithms analyze medical images - X-ray, computed tomography (CT), magnetic resonance data (MRIs) and 3D scanning information allow to clearly and quickly identify surface-structural anomelies. With the help of SI, the location of the surface of the face, soft tissues and nerves is clearly modeled, which helps the surgeon in a pre-plan of complex operations.

The importance of digital planning and his face surgery. Digital planning is a technology that allows surgical practice in the computer to moderate the operation and optimism. After the 3D model of the face is created, the surgeon can test various operations, identify problem areas, and choose the most optimal path. In addition, the preparation of individual templates or implants using 3D printer allows for accurate and effective operations in the face surgery.

Integration of Si and digital planning. The joint use of artificial intelligence and digital planning provides high accuracy and security in the face surgery. Data created on the basis of SI analysis are used in digital planning, each of the operation stages are determined in advance. This allows surgeons to work with minimal invasive and perfect results.

Advantages of SI and digital planning in face surgery

- Diagnostic clarity increases and surgical errors are reduced.
- The patient's recovery process accelerates by cutting the operation time.
- Especially the perfect results are achieved on the basis of an individual approach.
- The ability to clearly modeling complex anatomical structures.

Practical examples and best practices. Hundreds of years old in recent years are used in a hundred surgeries, and digital planning technologies in many successful practices. For example, complex and dangerous surgical procedures, especially in the reconstruction of hundred bones and correction of the asymm of the face, is now being implemented using 3D modeling and si algorithms. At the same time, the ability to create implants and templates adapted to individual anatomical features of the patient also improve the operation results.

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Application of artificial intelligence in the surface surgery. Artificial Intelligence (Si) began to be widely used in medicine in recent years, especially in the surface (canylsylophyal) surgery. SI technologies are assisting in the following areas:

- Diagnostics: X-ray, tomography and other images can be analyzed automatically. This will help the doctor create a medical plan in determining the disease and treatment.
- Facial structure modeling: The 100's 100-way of patient is modeled in 3D formats, which allows you to prevail the results.
- Reduction of errors: It provides real time warnings to reduce errors that can occur during operation.

Advantages of digital planning.Operations can be clearly planned using digital technologies.This allows:

- Individual approach: a separate 3D plan is made for each patient.
- Evaluation of the result: The postoperative view is pre-evaluated through simulation.
- Support in complex cases: accurate planning in face-to-shores or congenital defects is of life significance.

Using robotic systems in operations

- Robot Assistant Surgery: In some cases, Si-based robot systems help surgery with high precision.
- Minimum invasive methods: Cuts using digital planning and si are minimal, which accelerates the recovery process.

Future prospects. The role of artificial intelligence and digital planning is growing in face surgery. Creating autonomous surgical systems using Si, there are prospects for the development of surgical education and practice using virtual reality (VR) and expanded reality (AR) technology. In addition, further improving the algorithms on the basis of large-scale medical data is expected to improve the results in the face surgery.

Benefits for artificial intelligence and digital planning in face surgery. Artificial intelligence and digital planning technologies create great convenience not only to surgeons, but also to patients. Over the run, the exact 3D model of the patient's 100D structure is prepared and the result of the surgical result is published in advance. This increases the patient's confidence in surgery and improves psychological preparation. Also, during the postoperative recovery, the possibility of side complications and re-surgery decreases due to an individual planned approach.

Technological restrictions and difficulties. At the same time, there are some restrictions on the wide application of artificial intelligence and digital planning technologies in face surgery. Their quality medical information is required for their work, as well as high-level technical equipment and specialists. Some complex anatomical cases or algorithms are required to improve pathologies. Therefore, regular research work should be carried out in further development and implementation of these technologies.

Conclusion

Hundreds of intelligence and digital planning technologies are one of the most important achievements of modern medicine. They create a wide range of opportunities to carefully plan the oppressive process, and to adapt to the patient's individual anatomy. These technologies help to conduct clear, secure and effective and effective and improve patients' rapid recovery and improvement in life quality. At the same time, artificial intellect and digital planning are expected to further strengthen the location through technological development and new scientific research.

Used literature

1. R. Doshi, K. K. Hiran, M. Gök, E. M. El-kenawy, A. Badr, and M. Abotaleb, “Artificial Intelligence's Significance in Diseases with Malignant Tumours”// Mesopotamian Journal of Artificial Intelligence in Healthcare, vol.35, pp.35-39,July 2023. https://doi.org/10.58496/MJAIH/2023/007
2. M. M. Mijwil, AH. Al-Mistarehi, M. Abotaleb, E. M. El-kenawy, A. Ibrahim, A. A. Abdelhamid, and M. E. Eid, “FromPixels to Diagnoses: Deep Learning's Impact on Medical Image Processing-A Survey”// Wasit Journal of Computer andMathematics Science, vol.2, no.2, pp.8-14, September 2023. https://doi.org/10.31185/wjcms.178
3. Tariq, A. Y. Gill, and H. K. Hussain, “Evaluating the Potential of Artificial Intelligence in Orthopedic Surgery for Value-based Healthcare,” International Journal of Multidisciplinary Sciences and Arts, vol.2, no.1, pp.27-35, June2023. https://doi.org/10.47709/ijmdsa.v2i1.2394

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4. M. Sebastian and D. Peter, “Artificial Intelligence in Cancer Research: Trends, Challenges and Future Directions,”Life, vol.12, no12, pp.1-23, November 2022. https://doi.org/10.3390/life12121991