The 3rd International Congress of Surgical Oncology

IRAN - Mashhad

ICSOI3

23 - 25 November 2024
Novin Plus Hotel

Please submit your articles to *sorc@mums.ac.ir* by October 6

Topics discussed

Breast Cancer
Gastrointestinal Cancers
Skin Cancers
Soft Tissue Sarcoma
Head and Neck Cancers
Endocrine Cancers

Nazeran Hospital
Mashhad Cancer Charity

Mashhad University of
Medical Sciences

Surgical Oncology
Research Center

Target groups

General Surgery
Cancer Surgery
Colorectal Surgery
Hepatobilliary Surgery
Plastic Surgery
Vascular Surgery
Head and Neck Surgery
Maxillofacial surgery
Thoracic Surgery
Gynocology
Nuclear Medicine
Clinical Oncology
Hematology Oncology
Radiology
Pathology
Dermatology
Internal medicine
Gastrointestinal Medicine
Anesthesiology

To register for the congress
proceed through the link below

www.ICSOI3.ir
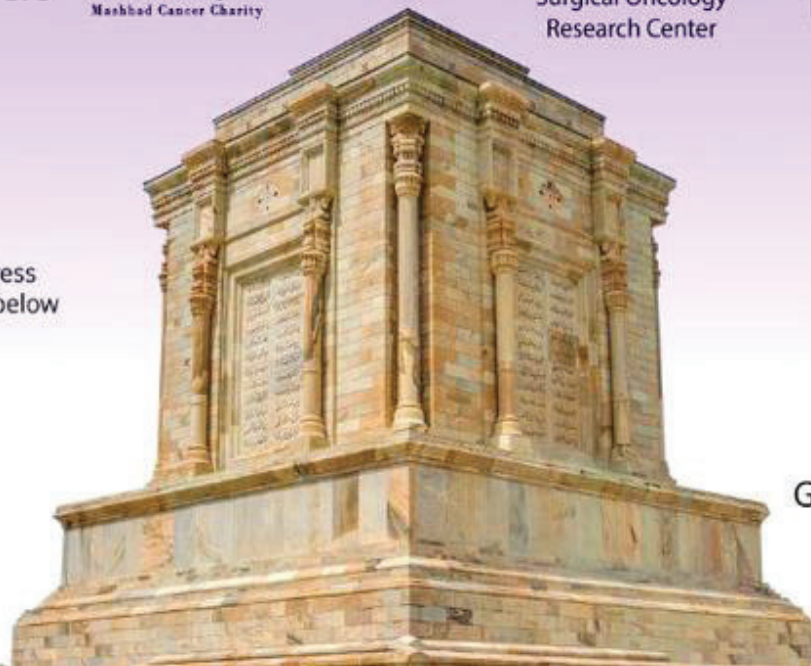
Efficacy of Intraoperative Radiotherapy and Oncoplastic Surgery in Early Breast Cancer Patients

Asieh Sadat Fattahi[*♦], Roham Salek[**], Mohammad Nasr Forghani[*], Maryam Emadzadeh[***], Fatemeh Shahabi[*], Mohammad Javad Daneshamooz[*]

Endoscopic and Minimally Invasive Surgery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
**Cancer Research Centre, Mashhad University of Medical Sciences, Mashhad, Iran*
***Department of Community Medicine and Public Health, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*

Abstract

Background: This study investigates the outcomes of breast-conserving surgery and minimally invasive radiation therapy for early-stage breast cancer, which are commonly performed in radiation therapy centers.

Method: A retrospective and prospective cohort study was conducted on 153 patients who underwent breast-conserving surgery with oncoplastic resection technique and sentinel axillary lymph node biopsy, followed by treatment with radiotherapy using the Zeiss Intrabeam device. Adverse events and breast cancer recurrence were assessed to evaluate the safety and efficacy of this therapeutic intervention. Data were analyzed using SPSS22 software.

Results: The mean age of patients was 55.74 ± 8.89 years, and the duration to breast cancer diagnosis was 36.73 ± 10.41 months. Of the adverse events, 61 (59.8%), 33 (32.4%), 3 (2.9%), and 5 (4.9%) patients were classified as stage 0, 1, 2, and 3, respectively. Invasive tumor recurrence and bedside tumor were observed in 10 (10.1%) and one (1%) patient, respectively. Positive human epidermal growth factor receptor type 2 neu ($P = 0.04$) and lymphovascular invasion ($P = 0.02$) were significantly associated with three-year survival.

Conclusion: Breast-conserving surgery and intra operative radiation therapy are associated with good treatment outcomes, acceptable three-year survival, and the lowest rates and degrees of complications for early-stage breast cancer.

Keywords: Breast cancer, Radiotherapy, Minimally invasive, Radiation therapy

♦Corresponding Author:
Asieh Sadat Fattahi, MD
Endoscopic and Minimally Invasive Surgery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
Email: fattahima@mums.ac.ir

Machine Learning and Explainable Artificial Intelligence for Predicting Lymph Node Metastases in Breast Cancer Patients

Asieh Sadat Fattahi[*♦], **Saeid Eslami**[**], **Toktam Dehghani**[**], **Maryam Hosseini**[***], **Amirali Ebrahimzadeh**[****]

[*]*Department of Surgery, Faculty of Medicine, Endoscopic and Minimally Invasive Research Center, Mashhad University of Medical Sciences, Mashhad, Iran*
[**]*Department of Medical Informatics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*
[***]*Endoscopic and Minimally Invasive Research Center, Mashhad University of Medical Sciences, Mashhad, Iran*
[****]*Computer Engineering, Sharif University of Technology, Tehran, Iran*

Abstract

Background: Axillary lymph node dissection (ALND) is the standard of care for breast cancer patients with positive sentinel lymph nodes (SLN), which are the first lymph nodes that drain the breast. However, many patients with positive SLNs may not have additional positive nodes, making the prediction of non-sentinel lymph node (NSLN) metastasis challenging. While ALND remains the gold standard, its unnecessary application in patients without evidence of additional positive nodes raises concerns due to potential complications such as lymphedema, nerve injury, and shoulder joint dysfunction. Furthermore, the integration of artificial intelligence (AI) and machine learning (ML) techniques presents an opportunity to enhance the precision of NSLN metastasis predictions.

Method: We conducted an extensive analysis with various ML models to predict NSLN metastasis, using a dataset of Iranian breast cancer patients. Employing eXplainable AI (XAI) methodologies, we analyzed 16 clinical features across a cohort of 183 patients. Through rigorous statistical evaluations and training and validation of ML models, this study aimed to assess the precision and robustness of these models.

Results: Our analysis revealed that the Random Forest (RF) model achieved an accuracy of 72.2% and an area under the curve (AUC) of 0.77. Logistic regression also demonstrated competitive performance with an accuracy of 65% and an AUC of 0.73. The RF model exhibited high sensitivity (75%) and precision (73%), effectively identifying critical predictors of NSLN metastasis, including the presence of ductal carcinoma in situ and tumor characteristics such as type and grade. eXplainable AI techniques, particularly SHapley Additive exPlanations (SHAP) values, provided insights into feature importance, enhancing model interpretability.

Conclusion: Our study offers ML models for predicting NSLN metastasis among Iranian breast cancer patients. These findings contribute valuable insights to the discourse on personalized treatment approaches, emphasizing the need for tailored prognostic tools across diverse populations.

Keywords: Machine learning, Explainable artificial intelligence (XAI), Breast cancer, Lymph node metastases, Sentinel lymph node

[♦]**Corresponding Author:**
Asieh Sadat Fattahi, MD
Endoscopic and Minimally Invasive Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
Email: asiehfattahi@mums.ac.ir

Integrating Surgery and Survival: A Comprehensive Model for Predicting Breast Cancer Outcomes

Adeleh Hashemi Fard♦

Department of Surgery, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Background: Breast cancer remains one of the leading causes of cancer-related mortality among women worldwide. Early and accurate prediction of survival outcomes is crucial for optimizing treatment strategies and improving patient prognosis. This study presents a comprehensive risk prediction model that integrates surgical treatment modalities and survival data, aiming to enhance long-term outcome assessments. By leveraging gene expression profiles and clinical data from a robust dataset, we have developed a nomogram to predict 5-, 10-, and 15-year survival rates for breast cancer patients which provides clinicians and patients with valuable insights.

Method: Data were extracted from the Breast Cancer Gene Expression Profiles dataset on Kaggle, which includes clinical and gene expression information for breast cancer patients. The dataset was cleaned and pre-processed to identify relevant variables, including surgical intervention types, age at diagnosis, tumor characteristics, and treatment history. Logistic regression analysis was employed to develop the risk prediction model, followed by the creation of a nomogram to visualize survival probabilities. The model was evaluated using metrics such as the area under the receiver operating characteristic curve (AUC-ROC) and calibration plots.

Results: The study included 1,634 breast cancer patients (with a mean age of 61 years), with 59.7% undergoing mastectomy and 40.3% conserving surgery. PAM50 subtypes were mostly Luminal A (37.3%), Luminal B (24.4%), and Basal (10.6%), and 51.0% had grade 3 histology. Hormone therapy was administered to 61.1%, and 77.8% who were postmenopausal. Patients had an average of 1.99 lymph nodes involved and 5.57 mutations. Mortality was observed in 56.8% of cases. Multivariable logistic regression had an AUC of 0.753, enabling a nomogram for predicting 5-, 10-, and 15-year mortality.

Conclusion: The developed nomogram demonstrates strong potential as a practical tool for predicting long-term survival in breast cancer patients, integrating clinical and gene expression data effectively. This approach could aid clinicians in tailoring treatment strategies and improving shared decision-making with patients.

Keywords: Nomograms, Gene expression, Prognosis, Survival, ROC curve

♦**Corresponding Author:**
Adeleh Hashemi Fard, MD
Department of Surgery,
Mashhad University of Medical Sciences,
Mashhad, Iran
Email: hashemifardadele@yahoo.com

Evaluating and Designing a Grading System for Axillary Lymph Node Involvement in Breast Cancer Patients by Ultrasonography

**Ehsan Soltani[*], Azadeh Jabbari Nooghabi[*♦], Ehsan Hassanzadeh Haddad[*],
Ali Javidi Dashtebayaz[*], Mohsen Najmaddini[*], Mehdi Jabbari Nooghabi[**]**

*[*]Surgical Oncology Research Center, Mashhad University of Medical Sciences,
Mashhad, Iran*
[**]Department of Statistics, Ferdowsi University of Mashhad, Mashhad, Iran

Abstract

Background: Ultrasound is being increasingly used as a preoperative tool to evaluate axilla. We conducted this study to assess the accuracy of different morphological views of axillary ultrasound and breast mass to evaluate the efficacy of ultrasound to detect lymph node involvement in patients with clinically negative axillary node.

Method: In this retrospective study, 290 patients with clinically negative axilla underwent preoperative axillary ultrasound. The suspicious nodes were evaluated and details of various descriptors were noted. These nodes were sampled during axillary sentinel node biopsy or dissection, and the correlation of ultrasonographic findings with histopathological report was investigated to calculate the accuracy of different descriptors. Accordingly, a grading system of axillary lymph nodes involvement was formulated.

Results: Mean age of the patients was 47.61 + 10.99 (ranging 21-80 years). A total number of 211 (82.4%) patients had metastatic lymph node. There was no significant difference between age and pathology results ($P = 0.884$). Due to the presence of various descriptors, the most accurate descriptors to indicate nodal involvement were: tumor size , mean diameter of lymph node ≥9.35 mm, cortical thickness ≥3mm, asymmetrical thickness of cortex and loss of hilar fat ($P < 0.050$).

Conclusions: Grading of nodal involvement on axillary ultrasonography can be useful for diagnosing patients with lymph node metastases, allowing these patients to proceed directly to ALND, avoiding unnecessary SLN biopsy.

Keywords: Axillary lymph node, Ultrasonography, SLN biopsy

[♦]Corresponding Author:
Azadeh Jabbari Nooghabi, MD
Surgical Oncology Research
Center, Mashhad University
of Medical Sciences,
Mashhad, Iran
Email: Jabbarinaz@yahoo.com

AI-based Cancer Center Design Process with a Focus on Healing Factors

Ameneh Sadat Fattahi Maassoum[*], Hero Farkisch[*♦], Mohammad Taji[**]

[*]Department of Architecture, Faculty of Art and Architecture, Islamic Azad University, Mashhad Branch, Mashhad, Iran
[**]Department of Mining, Faculty of Engineering, Islamic Azad University, Shahroud Branch, Shahroud, Iran

Abstract

Cancer centers play an important role in providing comprehensive care to cancer patients. In addition to the pain and suffering they endure due to their illness, these patients must spend many hours in medical centers. These facilities often lack the qualities of a peaceful environment and do not possess the factors of healing spaces. Previous research has shown that the design of these facilities significantly affects the overall patient experience, psychological well-being, and ultimately treatment outcomes. Traditional design approaches often ignore the importance of creating therapeutic environments that foster a sense of comfort, hope, and resilience. On the other hand, recent advancements in artificial intelligence (AI) have revolutionized the architectural design process, offering immense potential for addressing complex design challenges in healthcare facilities. Since AI has the ability to analyze vast datasets, identify patterns, and simulate various design scenarios, it can significantly enhance the creation of environments based on healing factors. By leveraging AI, designers can easily gain valuable insights into patient preferences, emotional responses to different design elements, and the impact of the built environment on overall well-being. This research proposes a novel AI-based model for cancer center design process that prioritizes healing factors. Through a combination of AI-driven analysis, patient-centered design principles, and expert input, this study seeks to develop innovative and effective cancer center designs that prioritize healing and improve the overall quality of care. By harnessing the power of AI, it is possible to create spaces that not only meet the physical needs of cancer patients but also support their emotional and psychological well-being.

Keywords: Cancer centers, Architectural design process, Patient experience, Healing factors, Artificial intelligence

♦Corresponding Author:
Hero Farkisch, PhD
Department of Architecture, Faculty of Art and Architecture, Islamic Azad University, Mashhad Branch, Mashhad, Iran
Email: hero.farkisch@mshdiau.ac.ir

MEJC
Middle East Journal of Cancer

Using an Anterior Stomach Wall Flap to Reconstruct the Second Part of the Duodenum Defect in the Duodenal GIST: A New Surgery Approach

Ehsan Soltani, Ehsan Hasanzadeh Haddad, Ali Javidi Dashtebayaz, Azadeh Jabbari Noghabi, Mohsen Najmaddini♦

Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

The most common site of gastrointestinal stromal tumor (GIST) disease in the digestive system is the stomach; however, one of the common places is the involvement of the lateral wall of the second part of the duodenum. In GIST surgery, there is no need for lymphatic dissection, and therefore, in duodenal GIST surgery, it is enough to reach a clean margin. In this condition, the lateral wall is usually removed and reconstructed with a vascular flap or graft from the jejunum, which is a time-consuming and complicated surgery.

In this article, we used the anterior wall of the stomach to repair the defect, which is technically easier, has fewer possible complications, and is shorter in terms of the operation time.

The patient was a 43-year-old man with bleeding from his upper gastrointestinal tract. Based on the evidence of endoscopy, endosonography, and computed tomography (CT) scan the patient had a gastrointestinal stromal tumor in the second part of the duodenum, measuring 40 × 37 mm. The tumor was in the lateral wall. Preoperative preparations were also based on Whipple's surgery. The evidence during the operation was a tumor that we could avoid doing Whipple by giving a suitable margin. Therefore, first the tumor was resected and a frozen section from the edges of the duodenum was sent for examination, which was tumor-free. Then, we passed the anterior incision of the duodenum through the first part of the duodenum and then through the pyloric valve and finally through the anterior wall of the stomach. Now, similar to what is done in Finney pyloroplasty, we first sutured the most proximal site in the stomach to the most distal site in the duodenum. Then, we sutured the two anterior and posterior walls together with separate absorbable sutures. The liquid diet for the patient started on the third day after the operation. Six months and one year after surgery, the patient was followed up with CT and endoscopy, without recurrence or gastrointestinal problems.

In cases of trauma or tumors that do not require lymphatic dissection, which we had a large defect in the lateral wall of the first and second part of the duodenum, this defect can be repaired like Finny pyloroplasty by extending the incision to the stomach and with the help of the anterior wall of the stomach.

Keywords: Duodenal GIST, New surgery approach, Pyloroplasty, Stomach

♦Corresponding Author:
Mohsen Najmaddini, MD
Department of Surgical Oncology, Mashhad University of Medical Sciences, Mashhad, Iran
Email: dr.mohsen_najmaddini@yahoo.com
NajmoddiniM4022@mums.ac.ir

Malignant Melanoma and Metastasis to the Spleen: A Rare Case Report

Ehsan Hasanzadeh Haddad, Ehsan Soltani, Mohsen Najmaddini⋆, Ali Javidi Dashtebayaz, Azadeh Jabbari Noghabi

Surgical Oncology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

Melanoma is an aggressive and highly metastatic disease. Metastatic melanoma is a fatal disease with a rapid systemic dissemination. The 5-year survival rate is less than 15% in patients with metastatic disease. While a minority of patients, which constitute 4% of newly diagnosed melanoma patients, present with distant metastasis at initial diagnosis, a majority of patients who initially present with an early stage eventually develop metastatic disease as a consequence of disease progression. Approximately one-third of all melanoma patients will experience disease recurrence although almost all organs can be involved, the most frequent target sites are the liver, bone, and brain. After the lymph nodes, the lungs are the most common site of malignant melanoma metastases. The spleen is usually an uncommon site of metastatic disease. Isolated metastases from melanoma are rare and could be found several months after primary diagnosis of melanoma. We present a case of splenic metastasis from malignant melanoma in a 68-years-old woman which presented unusually on abdominal computed tomography (CT) scan. A patient presented with epigastric abdominal pain was referred to as the left upper abdominal quadrant. He had a past medical history of left buttock cutaneous melanoma (2 years before), with left inguinal adenopathy that underwent lesion excision and inguinal lymphatic dissection. Physical examination revealed mild tenderness in the left upper abdominal quadrant. No organomegaly or masses were clinically identified. Abdominal ultrasound (US) of the abdomen revealed the presence of a round solid mass at the middle part of the spleen (5 × 4.5 cm), with mixed echogenicity. The patient was therefore submitted to CT, which showed a round mass (47 × 45 × 42 mm) at the middle part of the spleen, which was mild enhancement with hypodense areas. CT appearance could also be compatible with a splenic metastasis. Due to US and CT clear findings and the patient's history and symptoms, he was referred for surgery for splenectomy. Splenectomy was done with open approach. Histological report confirmed the diagnosis of metastatic spleen lesion from melanoma. The patient discharged with good condition and was observed. Splenic metastases are uncommon. Isolated metastases from melanoma are rare and could be found several months after primary diagnosis of melanoma. Surgery remains the most effective treatment, especially for metachronous disease, offering the best chance of long-term survival.

Keywords: Metastasis, Malignant melanoma, Spleen

⋆**Corresponding Author:**
Mohsen Najmaddini, MD
Department of Surgical Oncology, Mashhad University of Medical Sciences, Mashhad, Iran
Email: NajmoddiniM4022@mums.ac.ir

What Should be Documented in the Summary Sheet of a Patient with Breast Cancer?

Alireza Ghassemi Toussi♦

Medical Toxicology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

A 33-year-old female patient undergoes primary surgery due to adenocarcinoma of the right breast. After the operation, she is discharged and subjected to serial follow-up. After 2 years, the patient's sister presents with symptoms of a breast mass. After mammography biopsy, the diagnosis of adenocarcinoma is also confirmed for her and surgery is required to remove the mass.

The main cause of breast cancer in women is not yet known, but the following factors can increase the chance of developing breast cancer: 1) race, 2) family history, 3) mutations of various genes such as BRCA1.

Both sisters complain from the attending physician for not informing about the need to follow up other family members. They also claim: If the doctor had warned us about the need to refer close family members such as sisters, the second sister was undergoing diagnostic tests at the same time and her cancer was discovered earlier. In the investigations obtained, no written document was found recommending to inform other female family members. The attending physician was convicted of negligence due to improper documentation. In the case above, in addition to verbally notifying the patient about the need to inform other family members, written documentation in the summary sheet of the patient's file about the need to inform and follow up other female members of the family must be done.

Keywords: Breast neoplasms, Adenocarcinoma, Malpractice, Documentation

♦Corresponding Author:
Alireza Ghassemi Toussi, MD
Medical Toxicology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
Email: GhassemiTA@mums.ac.ir

Delay in Performing Hysterectomy Surgery in a Patient with Uterine Cancer due to the Husband's Disapproval and Occurrence of a Disaster

Alireza Ghassemi Toussi♦

Medical Toxicology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

A 45-year-old married woman presents with uterine bleeding. Uterine cancer is reported in supplementary investigations. It requires hysterectomy. The patient consents to surgery. With the assumption that the above procedure will lead to infertility, the doctor also requests the husband's consent.

The patient's husband refuses to consent to his wife's surgery. That is why, the doctor refuses to perform surgery. After several months, the patient underwent emergency hysterectomy surgery by another doctor due to severe bleeding leading to shock. The patient dies after a few days.

One of the basic principles of professional medical ethics is obtaining informed consent from the patient before starting treatment. It is mentioned in the current law that if a person reaches the age of 18 years and have good mental health, his/her own satisfaction alone is sufficient for therapeutic surgery.

Considering that the patient's operation was therapeutic and necessary, there was no need for the consent of the patient's husband. In similar cases, it is recommended to get the necessary advice from a legal expert in order to prevent such incidents.

Keywords: Hysterectomy, Informed consent, Uterine neoplasms, Ethics, Medical

♦Corresponding Author:
Alireza Ghassemi Toussi, MD
Medical Toxicology Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
Email: GhassemiTA@mums.ac.ir