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"Transforming Patients Care through Minimally Invasive Procedures"

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ABSTRACTS

9th Annual Scientific Conference 2025
Interventional Radiology Society of Pakistan

ORAL PRESENTATIONS (O)

O1

Endovascular Management of Biliary Strictures

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Purpose: Biliary strictures are a major cause of obstructive jaundice which represents a significant challenge to patient quality of life due to its association with biliary sepsis, hepatic failure and death. PTBD is known to be an established option for the treatment and palliation of benign and malignant biliary strictures. We conducted this study to evaluate the effectiveness of percutaneous transhepatic biliary drainage (PTBD) in the treatment of patients with obstructive jaundice as a result of benign and malignant biliary strictures.

Methods: We performed a retrospective review of patients presenting between January 2015 and June 2023 with symptoms of obstructive jaundice due to benign and malignant biliary strictures who underwent percutaneous transhepatic biliary drainage at a tertiary care hospital in Karachi, Pakistan who either previously failed or were not suitable for endoscopic retrograde cholangiopancreatography (ERCP). All cases were performed by an experienced interventional radiologist according to departmental protocol. Data was collected on baseline patient characteristics, co-morbidities, procedural and inventory details, and post procedure outcomes. The primary outcome was successful decompression of the biliary tree with a subsequent decrease in bilirubin. Major and minor complications, as well as mortality, were also assessed.

Results: Between January 2015 and June 2023, we conducted 70 percutaneous transhepatic biliary drainage (PTBD) procedures on benign and malignant biliary strictures. 63% of our patients were male and 37% were female, with an average age of 55.2 years. LDLT anastomotic strictures (34.8%) and cholangiocarcinoma (17.4%) were the most commonly encountered sub-types for benign and malignant biliary strictures, respectively. The common bile duct was the most frequent site of stricture (39.1%). Technical success was achieved in 98.6% of cases, with a right sided approach being preferred (75.7%). Hospitalization >24 hours was needed for 65.7%. of patients. We performed external biliary drainage (39.1%), internal external biliary drainage (29%), biliary stenting (15.9%), combined external-internal external drainage (2.9%), combined external drainage-biliary stenting (1.4%) and endoscopic wire placement for rendezvous ERCP (11.6%). All patients were followed up at 1 and 2 weeks. Clinical success was observed in 92.5% of patients, defined by bilirubin reduction. The overall complication rate was 14.2%, consisting of mostly minor complications which were self-resolving. We encountered 2 mortalities during the follow-up period which were due to sepsis and cardiopulmonary arrest, however, neither were due to the procedure.

Conclusion: The study demonstrates that percutaneous transhepatic biliary drainage is a safe and effective procedure for the management of symptomatic biliary strictures, and it should be offered as a first line treatment option, especially for patients in whom ERCP is not suitable or has previously failed.

O2

Accuracy of Image Guided Needle Localization of Breast Lesions

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Background: Accurate preoperative localization of impalpable breast lesions is critical to achieving successful surgical excision and improving breast conservation outcomes. This study audits the accuracy of image-guided needle localization using stereotactic or ultrasound guidance based on established standards.

Methods: Data was collected for 98 cases involving image-guided needle localization. Key parameters included the distance of wire placement from the lesion, lesion histopathology (benign vs malignant), Lesion margins, and the need for repeat surgeries. Compliance with audit standards (>95% wires within 10 mm and >98% diagnostic accuracy at the first operation) was assessed.

Results: Demographics and Procedure Details: A total of 89 cases with complete data were analysed, excluding 9 cases for which histopathology, lesion margins, and repeat surgery outcomes were unavailable. The mean patient age was 49.7 years (range: 22-75 years). Ultrasound guidance was used in 76% of cases, while stereotactic guidance was used in 24%. Biopsy clips were placed in 79% of cases.

Wire Placement Accuracy: 62% of wires were placed within 5 mm of the lesion, and 91% within 10 mm. While most cases achieved close placement, the target of >95% accuracy within 10 mm was not met.

Lesion Characteristics: Soft tissue masses constituted 87% of cases, calcifications accounted for 8%, 3% were architectural distortions and 2% post biopsy clips.

Histopathological Outcomes: Invasive breast carcinoma was identified in 49% of excised specimens. No malignancy was detected in 38% of cases. 7% and 3% cases were ductal carcinoma in-situ and atypical ductal hyperplasia respectively. There was one case of lobular carcinoma in-situ and one case of metaplastic carcinoma. Surgical margins were clear in all malignant cases, confirming successful excision.

Repeat Surgeries: Only 3% of patients required additional operations, achieving a first-excision success rate of 97%.

Conclusion: These results indicate effective localization practices and high adherence to quality standards with most cases achieving accurate wire placement and successful excision in the first operation. Only 3% of patients required additional operations, achieving a first-excision success rate of 97%.

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O3

Flow Diversion Treatment for Wide Neck Intracranial Aneurysms; Initial Experience

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From April 2022 till December 2024, we performed 22 cases of flow diversion stent placement for wide neck brain aneurysms at Ziauddin Hospital, Clifton.

These patients were required to follow up after 6 months with DSA, majority of whom had complete occlusion of the aneurysms either within the primary procedure or in the follow up. One patient rebled and expired after one week. (This patient had multiple aneurysms so probably some other aneurysm had bled). One patient has endoleak for which a repeat procedure with second FD was placed with complete occlusion of aneurysm after 2nd procedure. In one patient FD was placed for CCF with partial response. This patient was treated again successfully with embolization from venous side. Overall complete response was achieved in 19 out of 22 patients after first procedure.

Conclusion: Flow diversion is a safe and effective treatment for wide neck intracranial aneurysms.

O4

Advancing Hepatoma Treatment: Our Experience With Trans Arterial Radioembolization

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Introduction: Trans arterial radioembolization (TARE) represents a promising therapeutic option for patients with hepatoma. As one of the few institutions offering TARE in Pakistan, we aim to share our experience and outcomes from five follow-up cases to raise awareness and expand the accessibility of this innovative procedure.

Materials and Methods: This presentation reviews five cases of patients diagnosed with HCC treated with TARE at The Aga Khan University Hospital. Among these, four cases were advanced hepatoma with tumor infiltration into the portal vein, while one case was hepatoma without portal vein involvement. Treatment planning involved a multidisciplinary approach, utilizing advanced imaging techniques for precise catheter positioning and dosimetry. Follow-up assessments were conducted through imaging and clinical evaluations over a defined post-treatment period.

Results: Favorable outcomes were observed in four out of five patients, demonstrating no significant early complications, and showing stabilization or improvement in tumor status during follow-up. Our findings suggest that TARE can be safely integrated into the therapeutic arsenal against hepatoma in our context, highlighting the importance of proper patient selection and follow-up care.

Conclusion: The successful implementation and positive results from our initial cases of TARE signify a critical development in treating hepatoma in Pakistan. We anticipate that sharing our experience will promote wider acceptance and utilization of TARE among radiologists and clinicians, ultimately enhancing patient care in this field.

Keywords: Trans arterial radioembolization, hepatoma, Radiological Society of Pakistan, TARE outcomes, patient follow-up.

O5

Endovascular Management of Complex Thoracic Aortic Pathologies: A Focus on TEVAR A Single-Center Experience in Pakistan

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Background: Thoracic aortic injuries are reported to account for 10 to 20% of all mortalities due to high speed deacceleration trauma. [1, 2]. Pathological changes in the aorta (thoracic) manifest in about 5 to 6 instances for every million individuals each year with aneurysm dissection and rupture being the most frequently encountered conditions [3]. Thoracic aortic pathologies such as traumatic injuries, aneurysms, dissections have high morbidity and mortality and generally necessitate immediate intervention, either *via* open surgery or endovascular approach [3, 4]. Thoracic Endovascular Aortic Repair (TEVAR) has transformed their management, offering minimally invasive solutions with favorable outcomes.

Objective: To evaluate the safety, efficacy, and outcomes of TEVAR in a single-center study in Pakistan.

Methods:

- **Design:** Retrospective analysis of 10 patients (2019-2024).
- **Participants:** Patients with thoracic aortic pathologies (trauma, dissection, aneurysms).
- **Procedures:** CTA-based planning and stent-graft deployment *via* femoral access.
- **Devices:** Zenith Alpha, Zenith TX2, Valiant Thoracic Stent Grafts.

Results:

- **Patients:** Age 27-72 years, Male:Female ratio 6:4.
- **Pathologies:** Traumatic injuries, Type B dissections, aneurysms, pseudoaneurysms, penetrating ulcers.
- **Technical Success Rate:** 100%.
- **Complications:** 2 cases of type I endoleak managed successfully. No perioperative deaths, stroke, or spinal cord ischemia.

Conclusions: TEVAR is a safe, effective, and versatile endovascular approach for managing thoracic aortic pathologies. The study reinforces the global reliability of TEVAR while emphasizing its importance in Pakistan.

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O6

Fertility-Sparing Treatment of Uterine Arteriovenous Fistulas with Uterine Artery Embolization: A Case Series

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Background: Uterine arteriovenous fistulas (AVFs) are a rare cause of heavy vaginal bleeding, primarily affecting women of reproductive age, and can result in significant morbidity if left untreated. Diagnosis is typically made on radiologic imaging, and management options include medical, radiological, and surgical interventions.

Objective: To present a case series of uterine AVFs diagnosed using ultrasonography, magnetic resonance imaging, or angiography, and treated with uterine artery embolization (UAE), with a focus on fertility-sparing treatment options.

Outcome: Our case series demonstrates the effectiveness of UAE in treating uterine AVFs, with a notable outcome being the successful pregnancies and deliveries of healthy offspring in a subset of women who underwent this procedure. This highlights the potential of UAE as a fertility-sparing treatment option for women with uterine AVFs, and underscores the importance of angiography in both diagnosis and treatment of this condition.

O7

IVC Filter Retrieval: Navigating Routine and Complex Scenarios

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Inferior vena cava (IVC) filters are crucial for preventing pulmonary embolism (PE) in patients with contraindications to anticoagulation. While retrievable filters offer a temporary solution, their removal can be challenging, especially in cases involving prolonged dwell times, embedment, or complications such as tilt or migration. Our study evaluated the outcomes of IVC filter retrieval at our institution, focusing on factors influencing procedural success.

Methods: Our retrospective study analyzed data from 29 patients who underwent attempted IVC filter retrieval. Data included patient demographics, filter characteristics (type, placement site, dwell time), retrieval techniques (simple *vs.* complex), fluoroscopy time, and outcomes. Simple retrievals involved standard snare techniques, while complex retrievals utilized advanced methods like forceps or specialized kits.

Results: The overall retrieval success rate was 86.2%. Retrieval success was significantly higher in simple cases (95.5%) compared to complex cases (71.4%, p=0.047). Mean fluoroscopy time was significantly longer for complex retrievals (45.71 minutes) compared to simple retrievals (28.64 minutes) (p=0.001). Dwell time significantly influenced retrieval success, with a median dwell time of 50 months for failed retrievals compared to 3.7 months for successful retrievals (p=0.004).

Conclusion: Our study demonstrates that timely retrieval is crucial for successful IVC filter removal. Complex retrievals present significant challenges, requiring advanced techniques and potentially increasing procedure time and complication rates. These findings emphasize the importance of robust follow-up protocols, prompt retrieval, and the availability of advanced retrieval techniques for optimal patient outcomes.

Keywords: IVC filter retrieval, Complex retrieval, Simple retrieval, Snare technique, DVT

O8

Endovascular Treatment of Limb Ischemia; Single Centre Experience

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Purpose: To evaluate the effectiveness of endovascular management *i.e.* balloon angioplasty and stenting as a first-choice revascularization procedure in patients with critical limb ischemia (CLI).

Materials and Methods: We performed a retrospective review of patients presenting between June 2017 to December 2023 with symptoms of critical limb ischemia who underwent endovascular intervention at a tertiary care hospital in Karachi, Pakistan. Cases performed by a multidisciplinary team comprised of interventional radiology and vascular surgery. Data was collected on baseline demographics, comorbidities, procedural and inventory details, and post procedure outcomes. The primary outcome was successful healing of the wound and resolution of pain. Mortality, major amputation, and patency was also assessed.

Results: A total of 245 patients with clinical features of CLI underwent DSA for treatment purpose. Out of them 215 underwent endovascular treatment with either balloon angioplasty or combined with stenting. 30 patients did not receive endovascular treatment due to various causes such as acute thrombosis, severe distal disease *etc.* and were managed either surgically or conservatively. Out of remaining 215 patients, 198 underwent balloon angioplasty and, 26 underwent stenting combined with angioplasty. Of the angioplasty group, 69 underwent both above and below the knee, 65 above knee only and 55 below the knee only angioplasties. Among the stenting group 14 underwent kissing aorto-iliac stenting, 9 iliac and 2 femoral stenting. The patients were followed for at least 6 and 9 months with mean follow-up of 15 months. The technical success rate was 90%. The primary patency rate was 78% and 70% at 6 and 9 months respectively. Major amputation rate was less than 10%. The complication rate was < 7% (mostly minor) with 2 periprocedural mortalities, one due to external iliac artery rupture and second due to acute MI during femoral angioplasty.

Conclusion: Endovascular revascularization is associated with good primary patency and wound healing rates in patients presented with CLI and can play a vital role for limb salvage in patients who are in jeopardy of losing a foot or leg.

O9

Pelvic Arterial Embolization: Indications, Techniques, and Clinical Outcomes in the Management of Acute Hemorrhage

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Background: Pelvic arterial hemorrhage is a life-threatening condition requiring prompt and effective treatment. Pelvic arterial embolization (PAE) has emerged as a vital treatment option.

Objective: To review the indications, techniques, and clinical outcomes of PAE in the management of acute pelvic arterial hemorrhage.

Methods: A comprehensive review of the literature was performed, including studies on traumatic and non-traumatic pelvic arterial hemorrhage. Technical aspects, clinical outcomes, and complications of PAE were evaluated.

Results: PAE was found to be highly effective in controlling hemorrhage, with technical success rates ranging from 85-100%. Clinical success rates, defined as cessation of bleeding and hemodynamic stability, ranged from 80-95%. Complications, including ischemic injuries and rebleeding, were relatively rare.

Conclusion: PAE is a safe and effective treatment option for acute pelvic arterial hemorrhage, offering high technical and clinical success rates with minimal complications. Its use should be considered in the management of this life-threatening condition.

O10

A Comprehensive Review of Complications Following Microwave Ablation of Thyroid Nodules - Our initial experience

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Background: Microwave ablation (MWA) has gained significant popularity as a minimally invasive treatment for benign thyroid nodules, providing a non-surgical option with the promise of reduced recovery times and fewer complications compared to traditional surgery. This procedure uses heat generated by microwave energy to shrink or destroy thyroid tissue, thus alleviating symptoms such as compressive effects or cosmetic concerns. However, despite its growing use, MWA is not devoid of complications. Various issues can arise during and after the procedure, understanding the management, and effects of these complications is crucial for improving patient outcomes and optimizing the procedure's safety profile.

Aims: The aim of this comprehensive review is to:

1. Examine the spectrum of complications we encountered in patients undergoing microwave ablation for thyroid nodules.
2. Discuss strategies for managing complications associated with MWA.

Discussion: The review will highlight a range of complications that we encountered in patients undergoing MWA of thyroid nodule in our institution.

Recurrent Laryngeal Nerve Injury: Damage to the recurrent laryngeal nerve, which controls the vocal cords, can lead to hoarseness of voice. One of our patient developed hoarseness of voice post MWA for thyroid nodule.

Horner Syndrome: Patient developed ptosis (dropping of upper eyelid), anhydrosis (lack of sweating) and miosis (pupil constriction) after the procedure, diagnosed as Horner syndrome.

Infection and Inflammatory Response: A female patient, underwent microwave ablation for thyroid module developed pus discharging wound in front of her neck a few days after the procedure.

Conclusion: While microwave ablation for thyroid nodules is a promising and minimally invasive treatment option, it is not without its potential complications. We share our experience and the challenges we faced with this procedure. This review underscores the importance of a thorough understanding of the risks involved and the need for ongoing research to optimize the safety profile of MWA.

O11

Prediction and Assessment of Response to TACE in Patients with HCC Using DWI MRI

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Objective: To assess the role of apparent diffusion coefficient (ADC) measured with diffusion-weighted imaging (DWI) in predicting and assessing response of hepatocellular carcinoma (HCC) to transarterial chemoembolization (TACE).

Methods: One hundred and four patients with cirrhosis and untreated HCC who underwent TACE and MRI within 6-8 weeks before and after TACE were assessed. MRI included DWI. Two observers measured ADC of target HCC lesions and liver parenchyma on pre-TACE MRI and post-TACE MRIs which were conducted after 24 hours and after 6-8 weeks of performing TACE and also measured degree of tumor necrosis on post-contrast images on post-TACE CT Liver triphasic. Pre- TACE tumor ADC and changes in tumor ADC (ΔADC) after 24 hours of TACE as well as after 6-8 weeks of TACE were compared and correlated with contrast enhancement in CT Liver triphasic done 6-8 weeks after TACE.

Results: One hundred and four (104) HCCs were evaluated (mean size 4.41cm, range 1.9-9.4cm). HCCs with poor and incomplete response to TACE (<50% necrosis on post-TACE CT) had significantly lower pre-treatment ADC and lower post TACE ADC compared to HCCs with good/complete response (≥50% necrosis): ADC pre-TACE 1.18±0.41 *vs.* 1.76±0.51×10-3mm2/s (p=0.042); post-TACE ADC 1.26±0.36 *vs.* 2.10±0.32 ×10-3mm2/s (p=0.0008) [24 hours post TACE] and post-TACE ADC 1.25±0.32 *vs.* 2.07±0.32 ×10-3mm2/s (p=0.0008)[6 weeks post TACE].

Conclusion: This data suggests that pre-TACE tumor ADC can be used to predict HCC response to TACE and increase in ADC values of the target lesion is a reliable factor to predict tumor necrosis and success of TACE measured even 24 hours POST TACE and can replace contrast studies.

E-POSTERS (EP)

EP1

Endovascular Treatment of Iatrogenic Pseudoaneurysm and Arteriovenous Fistula Following Craniotomy for Vestibular Schwannoma

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Background: Vestibular schwannomas are rare, benign tumors that can cause significant symptoms, including vertigo, headache, and hearing loss. Retro-sigmoid craniotomy is a common treatment approach, but can be associated with rare complications, including pseudoaneurysm and arteriovenous fistula.

Objective: To report a rare case of iatrogenic pseudoaneurysm and arteriovenous fistula following retro-sigmoid craniotomy for vestibular schwannoma, and its successful treatment with a covered stent.

Outcome: A 43-year-old male underwent successful endovascular treatment with a covered stent, excluding the pseudoaneurysm and preserving vessel patency, with resolution of symptoms and no further complications.

EP2

Clinical Outcomes and Effectiveness of Thyroid Artery Embolization for Benign Thyroid Disease: Post-Procedure Response Analysis in Our Experience

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Background: Thyroid Artery Embolization (TAE) is an emerging minimally invasive procedure used for managing benign thyroid diseases, particularly in patients with large thyroid nodules or MNG that cause symptoms like difficulty in swallowing, breathing, and cosmetic concerns. Traditionally, the management of benign thyroid conditions has involved medications, surgery, or radioiodine therapy. However, TAE has gained attention as an alternative for patients who are poor surgical candidates or prefer a less invasive approach. In TAE the blood supply to the thyroid gland is selectively blocked, leading to a reduction in thyroid size and alleviation of symptoms.

Aims:

1. To assess the clinical outcomes and effectiveness of Thyroid Artery Embolization (TAE) in the management of benign thyroid diseases, with a focus on post-procedure response.
2. To analyze post procedure complications, recovery time, symptom improvement, and thyroid function changes in patients undergoing TAE.
3. To explore the long-term effects of TAE on thyroid volume reduction and symptom resolution in patients with benign thyroid nodules.

Discussion: IRCC Pakistan performed three TAE in year 2024.

Many of these patients were either unfit for surgery or preferred a non-surgical approach.

Our patients experienced a reduction in the size of the thyroid gland, as assessed by ultrasound or imaging studies performed after the procedure. Symptomatic relief, particularly regarding dysphagia and dyspnea, was noted within a few months post-TAE, with patients reporting improvement in quality of life. However, patients experienced transient symptoms like mild pain in neck, transient Hypertension, palpitations and mild cough and one of the patients experienced thyroid crisis that was later on managed.

Conclusion: Our experience indicates that TAE leads to noticeable reductions in thyroid volume and symptom relief. While short-term outcomes are favorable, long-term follow-up is crucial to monitor for potential recurrence of symptoms or thyroid function changes. TAE should be considered a viable option for patients with benign thyroid diseases who are not suitable for or prefer to avoid surgery, although further studies with larger cohorts and longer follow-up periods are needed to fully establish its long-term efficacy and safety profile.

EP3

Thyroid Alcohol Cyst Ablation for Cosmetic Concerns: Patient Selection and Outcomes

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Background: Thyroid cysts are typically benign and often discovered incidentally during imaging. While many are asymptomatic, some cause visible neck swelling or discomfort, prompting patients to seek treatment for cosmetic reasons. Historically, thyroid cysts were treated with observation or surgery. However, percutaneous ethanol injection (PEI) has become a minimally invasive alternative. PEI involves injecting ethanol into the cyst, leading to shrinkage through sclerosis and fibrosis, providing an effective solution for patients concerned with appearance.

Objective: This review evaluates the safety and efficacy of PEI for thyroid cysts, particularly in those seeking cosmetic improvement. The review also explores patient selection criteria and assesses the outcomes regarding both aesthetic and psychological benefits. In our institution we performed around 15 cases of PEI for thyroid cyst with satisfactory clinical outcomes.

Discussion: Thyroid cysts are classified as simple or complex, with simple cysts often remaining stable or resolving naturally. Complex cysts may cause symptoms, such as visible swelling. For patients with cosmetic concerns, PEI offers a promising treatment. Ethanol injection induces fibrosis and reduces cyst size, improving appearance. PEI is most effective for simple cysts and carries fewer complications than surgery.

Ideal candidates are individuals with benign, visible cysts that impact appearance. Pre-procedure imaging confirms the cyst's benign nature and rules out malignancy. After PEI, patients typically experience significant cosmetic improvement and report better self-esteem. Although complications are rare, some may experience mild discomfort or irritation at the injection site. Larger or more complex cysts may require multiple sessions, but PEI remains a preferable option compared to surgery.

Conclusion: PEI is an effective, minimally invasive treatment for thyroid cysts causing cosmetic concerns. It offers significant reductions in cyst size, improving appearance and psychological well-being. Careful patient selection is key to achieving optimal results. Long-term follow-up is recommended to monitor for recurrence. PEI presents a valuable alternative to surgery for those seeking cosmetic improvement.

EP4

Expanding Interventional Radiology Services for Osteoid Osteoma Ablation in Lahore: Enhancing Patient Care and Access

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Background: A benign bone tumor called osteoid osteoma is extremely painful and incapacitating. Radiofrequency ablation (RFA), a minimally invasive therapeutic option offered by interventional radiology (IR), effectively reduces pain. However, Lahore, Pakistan, has limited access to IR services for the ablation of osteoid osteomas.

Objective: By increasing access to minimally invasive treatment alternatives and improving patient care, this project seeks to extend IR services for osteoid osteoma ablation in Lahore. IRCC PAKISTAN team performed 15 cases in Hameed Lateef Hospital with 100% cure of pain in both adult and pediatric groups under CT guidance with spinal block and general anesthesia in adult and pediatric respectively.

Discussion: To increase IR services, a thorough strategy will be used, comprising:

The creation of an IR service specifically for the ablation of osteoid osteomas.

IR experts' education and capacity-building-Educating patients and healthcare providers about IR treatment choices.

Forming alliances with nearby medical facilities to boost referrals.

Conclusion: In addition to improving patient outcomes and increasing access to minimally invasive treatments, expanding IR services for osteoid osteoma ablation in Lahore will position the city as a regional center for IR services. By helping patients and developing the field of interventional radiology, this research could revolutionize the treatment of osteoid osteoma in Pakistan.

EP5

Pre-Operative Embolization of Nasal Tumors, its Outcomes in Patient's Better Prognosis

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Objective: The aim of this study is to describe the importance of pre operative embolization of nasal tumors and its added value in patient management presenting with nasal tumors.

Introduction: Angiography and intra-arterial embolization of a nasal tumor contributes in diagnosis, surgical planning, and treatment. Careful study of tumor vascular anatomy and adhering to general principles of intra-arterial therapy can prove this approach to be effective and safe. Various embolic materials are available and can be suited for a given tumor and its vascular supply. Angiography also provides intricate evaluation of the tumor vascular supply and proximity of neighboring vessels that can be of great value in surgical planning.

Intra-arterial embolization is often adjunctive therapy prior to surgical resection. Embolization and devascularization of these tumors can reduce blood loss during surgical resection and improve visualization of the surgical site. In patients who are not candidates for surgical resection, intra-arterial embolization can provide palliative therapy.

Material and Method: Inclusion criteria: patients with nasal tumors.

Conclusion: Endovascular embolization for nasal tumors can provide an effective adjunctive therapy to resection. Pre-operative embolization in such cases can reduce the intraoperative time, blood loss and tumor relapse rate. Novel techniques and embolic agents will continue to advance endovascular treatment, and emerging approaches including intra-arterial chemotherapy may expand the endovascular options for cancer therapy.

EP6

Multiple Uterine Artery Pseudoaneurysms Post C-Section Presented with Life Threatening Bleed during On-Call Hours

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Uterine artery pseudoaneurysm (UAP) is a rare but potentially life-threatening condition leading to significant hemorrhage. Transcatheter uterine artery embolization (UAE) is effective in managing such cases.

We present a successful case of transcatheter embolization of multiple UAP post cesarean section and bilateral fallopian tubal removal.

Case Report: A young female patient referred to our hospital from secondary care hospital post C-section done in the morning due to sudden drop of blood pressures, dropping hemoglobin with distended abdomen. Outside ultrasound shows large hematoma with hemoperitoneum. CT at our department showed active bleeding from both uterine arteries with hematoma and hemoperitoneum. IR team was taken on board. During procedure both uterine arteries show pseudoaneurysm which were successfully embolized. Patient remained stable throughout the hospital stay and showed a positive response to treatment.

Conclusion: Uterine artery pseudoaneurysm (UAP) can develop after traumatic pelvic operations and non-traumatic delivery/ abortion. TAE of the uterine artery could be an effective treatment in most of the cases in which the patient is stable. In cases of unstable patients hysterectomy is usually the only option.

EP7

Prostate Artery Embolization in a 64-Year-Old Male with Benign Prostatic Hyperplasia: First Case at Aga Khan University Hospital

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Background: Benign prostatic hyperplasia (BPH) is a non-malignant enlargement of the prostate gland, frequently causing lower urinary tract symptoms (LUTS) that adversely affect quality of life. BPH affects up to 50% of men over the age of 60 years and is a significant contributor to LUTS [1, 2].

Traditionally, transurethral resection of the prostate (TURP) and open simple prostatectomy (OSP) are surgical treatments of choice, but these can be associated with significant complications, including retrograde ejaculation, urinary incontinence, and erectile dysfunction [3].

Prostate artery embolization (PAE) has emerged as a minimally invasive alternative for patients with contraindications to surgery or failed medical therapy. This case report details the clinical course of a 64-year-old male with severe LUTS due to BPH, managed successfully with PAE. A review of recent literature on the effectiveness of PAE compared to TURP and OSP is also included.

Case Presentation: 64-year-old male was referred to the interventional radiology clinic with complains of urinary frequency and urgency for the consideration of prostate artery embolization. His medical history included mild hypertension controlled on medications. He was previously on medical management (Tamsulosin) for his lower urinary tract symptoms, which had lost its effectiveness over time.

The patient was primarily experiencing urinary frequency and urgency without any evidence of urinary leakage or gross hematuria. There was no clinical evidence to suggest prostatic malignancy and there was no family history of prostate cancer. The patient was previously seen in urology clinic where his pre-procedure International Prostate Symptom Score (IPSS) was calculated to be 28. The patient had an outside per abdominal ultrasound examination of prostate that revealed the prostatic volume to be approximately 63 ml.

Considering imaging findings and the presenting symptoms, a diagnosis of benign prostatic hyperplasia (BPH) was made. The patient had denied radical prostatectomy due to possibility of known surgery related side-effects, and hence the decision was made for interventional radiology referral.

Intervention: Under fluoroscopic and digital subtraction angiography guidance and aseptic measures, local anesthesia was infiltrated, and 4-French vascular access sheath was placed in the right femoral artery. Subsequently, C1 catheter was used to cannulate bilateral internal iliac arteries and afterwards bilateral prostatic arteries were super-selectively cannulated with Echelon microcatheter and 0.014 Asahi Chikai microwire one after the other, confirming prostatic parenchymal blush.

Embolization of both the prostatic arteries was performed with 45-150-micron PVA particles with no significant prostatic parenchymal blush on the post-procedure run.

There were no complications encountered during or immediately after the procedure and the patient was shifted to the urology ward in clinically stable condition and was later discharged with a Foley catheter and advice for clinic follow-up.

Outcomes: On three-monthly follow-up, the patient demonstrated significant symptomatic improvement. The IPSS reduced from 28 to 17, corresponding to a shift from severe to moderate LUTS. Ultrasound imaging showed a reduction in prostate volume from 63 ml to 35 ml. The patient reported satisfactory symptom control and discontinued Tamsulosin, which had previously provided limited benefit. No adverse events were recorded during follow-up visits.

Discussion: Traditionally, surgical interventions like transurethral resection of the prostate (TURP) and open prostatectomy (OSP) have been considered the gold standards for treating BPH, providing significant symptom relief and improvements in urinary flow. However, these procedures come with risks such as bleeding, infection, and long-term sexual dysfunction. In contrast, prostate artery embolization (PAE) has emerged as a promising minimally invasive alternative, especially for patients who are either unwilling or unable to undergo surgery [3].

The inclusion of PAE in the American Urological Association (AUA) guidelines highlights its growing recognition as a viable treatment option for BPH. PAE works by selectively embolizing the prostatic arteries, leading to a reduction in prostate volume and alleviating lower urinary tract symptoms (LUTS). Its minimally invasive nature, along with the preservation of sexual and ejaculatory function, makes it an appealing option for many patients [4].

Clinical trials and recent systematic reviews have demonstrated that PAE provides comparable improvements in International Prostate Symptom Score (IPSS) and quality of life to TURP. However, TURP remains superior in terms of urodynamic measures, such as maximum flow rate (Qmax) and post-void residual volume (PVR) [2, 3]. Notably, PAE has been associated with significant improvements in erectile function, particularly in sexually active patients, as highlighted by studies like Altman *et al.* [3].

In this case, the patient's prostate volume reduction of 44% aligns with results from recent studies, which emphasize the importance of precise pre-procedural planning and arterial anatomy mapping to optimize outcomes. The ability to perform PAE under local anesthesia, combined with the absence of complications, further underscores its appeal as a low-risk intervention [1].

Despite these promising outcomes, long-term data on PAE's efficacy remains limited. While TURP provides sustained results for up to 24 months, most studies on PAE report follow-up periods of 12 months, leaving its long-term durability and recurrence rates under investigation [2, 3]. Some studies have reported recurrence rates of up to 20% within five years and 30-60% within ten years, likely due to glandular regrowth. In such cases, repeat PAE or subsequent surgical interventions can offer effective solutions [4].

Overall, prostate artery embolization (PAE) represents a valuable treatment for BPH, particularly for patients seeking a minimally invasive, low-risk alternative to traditional surgical options. The collaboration between urologists and interventional radiologists is crucial for patient selection and procedural success. While challenges remain, such as slower symptom relief compared to TURP and the need for further long-term research, PAE's promising safety profile, minimal invasiveness, and potential for repeatability position it as a key player in the evolving management of BPH.

Conclusion: PAE has emerged as an effective and minimally invasive alternative to traditional surgical interventions in the management of BPH. With favorable outcomes in terms of symptom relief, prostate volume reduction, and preservation of sexual function, PAE should be considered a first-line treatment for patients who are contraindicated for or prefer not to undergo surgery. Continued research, particularly long-term studies, is essential to further validate its efficacy and durability. As imaging and procedural techniques advance, PAE's role in the management of BPH is expected to grow, offering an appealing option for many patients seeking a less invasive solution.

Keywords: Benign prostatic hyperplasia, prostate artery embolization, lower urinary tract symptoms, minimally invasive therapy, interventional radiology.

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EP8

Inferior Petrosal Sinus Sampling (IPSS) in the Era of Minimally Invasive Techniques, a Tool in Diagnosing Cushing's Disease

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Background and Objectives: Inferior petrosal sinus sampling (IPSS) is a specialized diagnostic procedure primarily used to differentiate between various causes of ACTH-dependent hypercortisolism, particularly in cases where non-invasive tests or imaging yield inconclusive results. This technique is considered the gold standard for distinguishing Cushing's disease from ectopic ACTH syndrome. In IPSS, bilateral femoral veins are accessed, and microcatheters are placed into the inferior petrosal sinuses under fluoroscopic guidance. Venous angiography confirms catheter placement by observing retrograde flow of contrast into the cavernous sinus. Simultaneous blood samples are taken from both petrosal sinuses and a peripheral vein at baseline and at intervals after administering vasopressin. We present the case of a 30-year-old male who presented with complaints of excessive hair growth, generalized weakness, and acne for 3 weeks. On further investigations, he was found to have raised serum and urinary cortisol levels. Subsequently, he underwent IPSS and MRI pituitary protocol. Our primary objective to discuss this case is to highlight the significance of inferior petrosal sinus sampling to evaluate the source of excess ACTH secretion in a patient with suspected Cushing syndrome. This technique was employed to determine whether the ACTH elevation originated from the pituitary gland or any other ectopic source.

Design and Methods: This is a retrospective case study of a patient who underwent inferior petrosal sinus sampling at our department. Following confirmation of a pituitary microadenoma, the patient underwent subsequent microadenoma resection. We utilized the department's PACS and the hospital's electronic health database to retrieve relevant imaging and clinical data. All patient's data will be de-identified to ensure confidentiality, and findings will be presented in the form of a poster.

Results: Keeping in view the clinical scenario, the patient underwent bilateral IPSS. Venous samples from bilateral inferior petrosal sinuses were found to have raised ACTH levels, in concordance with neuroimaging findings of pituitary microadenoma. Following this diagnosis, the patient proceeded with successful microadenoma resection.

Conclusion: Inferior petrosal sinus sampling remains a valuable diagnostic tool for confirming Cushing's disease, particularly when non-invasive methods are inconclusive.

EP9

Audit of Combined Fine Needle Aspiration Cytology & Core Needle Biopsy in the Same Setting to Establish Histopathological Diagnosis

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Background and Objectives: Fine Needle Aspiration Cytology (FNAC) and Core Needle Biopsy (CNB) are both widely used techniques for histopathological diagnosis of various types of masses. FNAC is less invasive, quicker, and causes minimal patient discomfort, making it a valuable tool initially. However, in some cases, it may not be sufficient for actionable diagnoses or molecular testing, especially for cases that require large immunohistochemical panels or cases in which histological features are mandatory for the diagnosis. Core needle biopsy (CNB), on the contrary, provides samples that are suitable for histological features and sufficient for all ancillary studies. However, CNB is often performed by radiologists or clinicians without the direct participation of cytopathologists, which can lead to missed or delayed diagnoses. This study reports on the experience of combining FNAC and CNB performed in one setting by cytopathologists. The aim was to evaluate the impact of CNB on FNAC and the diagnostic efficiency of the combined procedures.

Material and Methods: This retrospective study was conducted at Aznostics The Diagnostic Centre Lahore over a period of 03 months from 1st July, 2024 to 30th September, 2024. A total of 70 patients were included in the study. The FNAC results were compared and integrated with the subsequent CNB results. The impact of CNB was categorized as follows: non-contributory, in cases of inadequate samples; confirmed, when the CNB and FNAC diagnoses were the same; improved, when the CNB diagnosis was consistent with the FNAC diagnosis and further specified the corresponding entity; allowed, when CNB produced a diagnosis that could not be reached by FNAC; changed, when the CNB changed the previous FNAC diagnosis.

Results: CNB confirmed the FNAC diagnosis in 52.86% of cases (n=37/70). CNB improved the FNAC diagnosis in 40% of cases (n=28/70). CNB allowed a diagnosis that could not be performed on FNAC in 4.28% of cases (n=3/70). CNB changed a previous FNAC diagnosis in 2.86% of cases (n=2/70). CNB was non-contributory in 0% of cases (n=0/70). CNB produced a positive impact on the whole diagnostic procedure in 47.10% of total cases (n=33/70). The combined FNAC and CNB resulted in actionable diagnoses in 100% of all cases (n=70/70).

Conclusion: The combined use of FNAC and CNB in one setting improves the diagnostic accuracy of both procedures. This approach exploits the advantages of each procedure, enhancing the accuracy of the final diagnosis.

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EP10

Role of Percutanous Transhepatic Cholangiography (PTC) in Patients Presenting with Obstructive Jaundice

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Objective: This study aims to determine the efficacy and significance of Percutanous Transhepatic Cholangiography that affect clinical outcomes of biliary drainage in patients with Obstructive Jaundice.

Methodology: It is a retrospective study includes 30 patients.

Inclusion Criteria: Patients with obstructive jaundice caused by non-operable biliary diseases, and they could not be treated en doscopically.

Exclusion Criteria: Presence of significant ascites and abnormal bleeding profile.

Introduction: Obstructive Jaundice has many etiologies; it may be caused by benign or malignant causes. Biliary obstruction leads to impairment of the patient's quality of life. Percutaneous transhepatic biliary drainage is effective and successfully leads to biliary decompression, with easy monitoring and catheter manipulation in the case of tube dysfunction or drainage problems.

In our hospital, PTC is performed in cases of biliary obstruction when ERCP is not accessible. PTBD is a safe and effective way to relieve jaundice caused by advanced unresectable malignant lesions and common bile duct injuries due to tumor extension and/or poor physical conditions.

The use of PTC accelerates internal and external biliary drainage and it is considers as the main technique of relieving biliary tract obstruction for malignant obstructive jaundice that occurs above the level of the common hepatic duct.

Conclusion: Percutaneous transhepatic cholangiography has high diagnostic accuracy rate 100% in detecting the dilatation of intra or extrahepatic biliary channels, the cause and the level of obstruction. Percutaneous transhepatic biliary drainage has high therapeutic success rate of bile drainage 90% with technical success rate 84.40% for passing the stricture in patients with obstructive jaundice.

Management of obstructive jaundice is always difficult and reliable clinical assessment as to the cause of the biliary obstruction is often not possible. Percutaneous transhepatic cholangiography may give a precise pathologic diagnosis before operation, or make surgical exploration avoidable. In spite of potential complications, it is a useful procedure essential for the management of difficult cases of obstructive jaundice.

EP11

Documentation of Post-Procedure Care Instructions after Intervention in Radiology

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Objective: The objective of this review is to evaluate the effectiveness and comprehensiveness of post-procedure care instructions documented in discharge summaries for patients who have undergone radiological interventions. Following procedures like biopsies, catheter placements, or interventional radiology treatments, following these guidelines is essential to increasing patient safety, minimizing problems, and guaranteeing a proper recovery.

Background: Radiological interventions, such as image-guided biopsies, catheter insertions, and minimally invasive treatments, require careful post-procedure monitoring and after-care. By lowering the risk of infection, controlling complications, and guaranteeing follow-up treatment, patients who receive clear, comprehensive instructions before discharge can greatly enhance their chances of recovering.

Methods: To evaluate the efficacy, completeness, and clarity of post-procedure care instructions for patients receiving radiological procedures, a review of discharge summaries was carried out. Key components evaluated included activity restrictions, wound care, pain management, signs of complications, medication instructions, and follow-up requirements.

Results: Results will discuss later.

Conclusion: Proper documentation of post-procedure care instructions in radiology is essential to ensuring patient safety and improving recovery outcomes. To guarantee that all essential elements—such as prescription instructions, wound care, follow-up appointments, and emergency contact information—are consistently included, the review emphasizes the necessity of uniform templates. Improved patient education through clearer discharge instructions can enhance post-procedure recovery, reduce complications, and foster continuity of care. Standardization of discharge instructions and the inclusion of visual aids or patient-friendly educational resources are recommended to improve clarity and compliance.

EP12

Ultrasound-Guided Aspiration of Hydrosalpinx: A Minimally Invasive Technique to Decrease Scar Site Length during Surgery

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Hydrosalpinx is a common inflammatory disease that affects female pelvic health. Treatment varies from medical management to surgery, depending on severity and reproductive goals. This case report demonstrates the successful use of ultrasound-guided aspiration of gross hydrosalpinx, offering a minimally invasive approach for symptom relief while preserving reproductive anatomy.

Case Report: A young female presented with menorrhagia and abdominal distension for several months. Ultrasound showed a large pelvic cyst (2000 cc) with internal echoes and incomplete septations, suggesting endometriotic cyst or hydrosalpinx. MRI confirmed

gross right-sided hydrosalpinx. Laboratory markers (alpha-fetoprotein, beta-HCG, CA-125) were normal. Due to the cyst's size and rupture risk, fluid drainage was recommended. Ultrasound-guided transabdominal aspiration of this cystic lesion was performed using a 16-gauge LP needle and 2400 ml of clear yellow fluid was obtained with no significant residual fluid.

Conclusion: Early recognition and appropriate intervention are essential in managing large pelvic cystic lesions. Ultrasound-guided aspiration is a promising, minimally invasive prior to surgery, offering immediate relief.

EP13

Ultrasound-Guided Tendon Fenestration: A Literature Review on a Novel Technique for Treating Chronic Tendinopathies

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Background: Chronic tendinopathies, characterized by persistent pain and dysfunction, are common musculoskeletal disorders that significantly affect quality of life. Traditional treatments, such as rest, physical therapy, and corticosteroid injections, often provide limited relief, especially in recalcitrant cases. In recent years, ultrasound-guided tendon fenestration has emerged as a novel minimally invasive technique aimed at enhancing healing by promoting tissue regeneration. This literature review examines the current evidence surrounding ultrasound-guided tendon fenestration, assessing its efficacy, safety, and application in the management of chronic tendinopathies.

Objective: To critically review the available literature on ultrasound-guided tendon fenestration and evaluate its effectiveness as a treatment modality for chronic tendinopathies.

Methods: A comprehensive literature review was conducted, focusing on studies published between 2010 and 2024. Articles were selected based on their examination of ultrasound-guided tendon fenestration for chronic tendinopathies, including Achilles tendinopathy, patellar tendinopathy, and lateral epicondylitis. Key outcome measures such as pain reduction, functional improvement, and healing time were assessed. The review also explored complications, patient satisfaction, and the advantages of ultrasound guidance in ensuring precision and minimizing adverse effects.

Results: The review revealed that ultrasound-guided tendon fenestration has demonstrated promising results in the management of chronic tendinopathies. Several studies reported significant reductions in pain and improvements in function, with many patients experiencing faster recovery times compared to traditional treatments. Ultrasound guidance allows for real-time visualization, ensuring accurate needle placement and minimizing the risk of complications. Complications were rare and mostly minor, including temporary soreness and minor bruising. Overall, patient satisfaction was high, with many experiencing long-term relief from chronic symptoms.

Conclusion: Ultrasound-guided tendon fenestration offers a promising minimally invasive alternative for the treatment of chronic tendinopathies. The precision provided by ultrasound guidance enhances the technique's safety and effectiveness, leading to improved outcomes in pain management and functional recovery. This literature review underscores the growing body of evidence supporting tendon fenestration as a valuable option for patients with refractory tendinopathy. However, further randomized controlled trials and long-term studies are needed to solidify its role in clinical practice.

Keywords: Ultrasound-guided tendon fenestration, chronic tendinopathy, tendon healing, musculoskeletal disorders, minimally invasive techniques, literature review, pain management.

EP14

An Article Review on Ultrasound-Guided Carpal Tunnel Release: Advancements in Minimally Invasive Techniques

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Background: Carpal Tunnel Syndrome (CTS) is one of the most common upper extremity disorders, often leading to significant pain, numbness, and functional impairment. Traditional surgical interventions, such as open carpal tunnel release, have been widely utilized but are associated with longer recovery times, post-operative complications, and cosmetic concerns. In recent years, ultrasound-guided carpal tunnel release (USG-CTR) has emerged as a promising minimally invasive alternative, offering precision, reduced recovery time, and fewer complications. This article review aims to evaluate the current body of research on the efficacy, safety, and advantages of ultrasound-guided carpal tunnel release compared to conventional methods.

Objective: To critically review and synthesize the available literature on ultrasound-guided carpal tunnel release, examining its benefits as a minimally invasive surgical technique for the treatment of Carpal Tunnel Syndrome.

Methods: A comprehensive review of articles from peer-reviewed journals published between 2010 and 2024 was conducted. Key studies assessing the outcomes of ultrasound-guided carpal tunnel release in terms of effectiveness, safety, recovery time, and patient satisfaction were included. Comparisons between ultrasound-guided techniques and traditional open surgery were also discussed. Parameters such as complication rates, post-operative pain, and functional recovery were critically analyzed.

Results: The review identified numerous studies supporting the efficacy of ultrasound-guided carpal tunnel release in improving patient outcomes. Most studies reported shorter operative times, reduced incision sizes, and faster recovery compared to traditional open release. The ultrasound technique also offered better precision in identifying key anatomical structures, reducing the risk of nerve damage. Moreover, patients undergoing USG-CTR experienced lower rates of post-operative pain and scarring. However, certain challenges, such as the requirement for specialized training and potential operator dependency, were noted.

Conclusion: Ultrasound-guided carpal tunnel release represents a significant advancement in the field of minimally invasive surgery, offering enhanced precision and faster recovery for patients with Carpal Tunnel Syndrome. This article review highlights the growing body of evidence supporting USG-CTR as a safe and effective alternative to traditional open surgery, although further large-scale randomized controlled trials are needed to solidify its place as a standard treatment option.

Keywords: Ultrasound-guided carpal tunnel release, minimally invasive techniques, carpal tunnel syndrome, surgical precision, post-operative recovery, article review, open carpal tunnel release.