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THE EXCHANGE

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Clinical Innovations | New Milestones | Better Outcomes

Cover Feature

Three-Vessel Fenestrated EVAR for a Hostile-Neck Juxtarenal Aortic Aneurysm

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In This Issue

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Feature Story
Medanta - Lucknow

Three-Vessel Fenestrated EVAR for a Juxtarenal Aortic Aneurysm

Juxtarenal abdominal aortic aneurysms are technically challenging to treat because of inadequate proximal landing zones and involvement of the visceral vessels. While conventional infrarenal endovascular aneurysm repair (EVAR) is often not feasible, open surgical repair may carry significant risk in elderly patients with multiple comorbidities. This case highlights the successful management of a complex hostile-neck juxtarenal abdominal aortic aneurysm using three-vessel fenestrated endovascular aneurysm repair (FEVAR) with an on-table physician-modified endograft.

Clinical Presentation

A 76-year-old gentleman presented to Medanta – Lucknow with persistent lower back pain. Contrast-enhanced CT angiography revealed a large juxtarenal abdominal aortic aneurysm measuring approximately 7.5 cm in maximum diameter. The aneurysm extended up to the level of the renal arteries and was associated with a short, hostile proximal neck and marked aortic angulation, rendering it unsuitable for conventional infrarenal EVAR.

Given the patient's advanced age, multiple comorbidities and the high risk of aneurysm rupture, definitive intervention was indicated. Open surgical repair was considered prohibitively high risk, prompting evaluation for a complex endovascular approach.

Evaluation and Diagnosis

Detailed preoperative imaging confirmed a symptomatic juxtarenal abdominal aortic aneurysm with an inadequate proximal landing zone and severe aortic angulation. Conventional infrarenal EVAR was not feasible because of the short proximal neck, while preservation of both renal arteries and the superior mesenteric artery (SMA) was essential to achieve a durable repair.

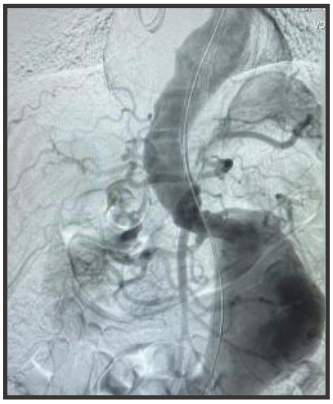
Following multidisciplinary evaluation by the Cardiothoracic & Vascular Surgery (CTVS) and Interventional Radiology teams, the patient was planned for three-vessel fenestrated EVAR using an on-table physician-modified endograft tailored to the patient's anatomy.

Surgical Management

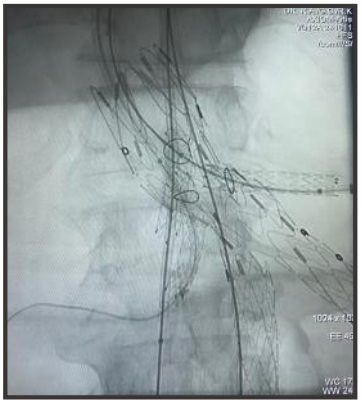
A three-vessel fenestrated endovascular aneurysm repair (FEVAR) was performed jointly by the CTVS and Interventional Radiology teams.

An on-table physician-modified endograft was customised by creating fenestrations corresponding to the origins of both renal arteries and the superior mesenteric artery. The modified endograft was successfully advanced and deployed despite the markedly angulated aortic anatomy. Each target vessel was subsequently cannulated through the respective fenestration, and bridging covered stents were deployed to maintain uninterrupted renal and mesenteric perfusion.

The aneurysm sac was completely excluded, achieving a secure proximal seal despite the short, hostile neck.

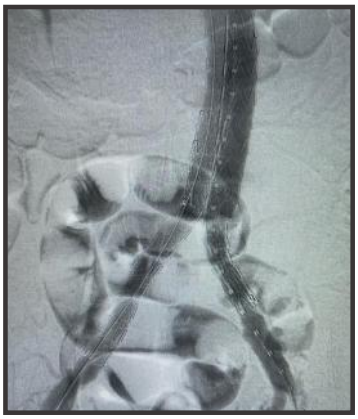


Pre-procedure aortogra showing large juxtarenal aneurysm sac with short, angulated neck



Target-vessel cannulation through the modified fenestrations; bridging stents directed into the renal and mesenteric vessels

Body of the modified endograft within the aneurysm sac with through-and-through wire access maintained



Deployed endograft conforming to the markedly angulated aorta, with the aneurysm excluded

Recovery and Outcome

Completion angiography confirmed successful exclusion of the 7.5 cm juxtarenal aneurysm with preserved

perfusion of both renal arteries and the superior mesenteric artery. A durable proximal seal was achieved without compromising the visceral branches despite the challenging anatomy. The patient remained clinically stable following the procedure, and the minimally invasive endovascular approach successfully avoided the need for high-risk open surgical repair.

Discussion

Fenestrated EVAR has expanded treatment options for patients with juxtarenal abdominal aortic aneurysms that are unsuitable for conventional infrarenal EVAR. In selected patients, physician-modified endografts provide an effective alternative when custom-manufactured fenestrated devices are unavailable or when treatment cannot be delayed, allowing repair to be tailored to the patient's individual visceral anatomy.

Successful treatment requires meticulous preoperative planning, precise endograft modification, accurate alignment of the fenestrations with the target vessels, and careful branch-vessel cannulation to achieve durable aneurysm exclusion while preserving visceral and renal perfusion.

Clinical Perspective

This case demonstrates that three-vessel fenestrated EVAR using a physician-modified endograft is a feasible treatment option for selected patients with hostile-neck juxtarenal abdominal aortic aneurysms who are unsuitable for conventional EVAR or open surgical repair. The ability to customise the endograft intraoperatively allows the repair to be tailored to the patient's visceral anatomy without waiting for a custom-manufactured device, an important advantage in symptomatic aneurysms requiring timely intervention. Successful preservation of both renal arteries and the superior mesenteric artery, together with durable aneurysm exclusion despite severe aortic angulation, highlights the value of a collaborative approach between Cardiothoracic & Vascular Surgery and Interventional Radiology in managing anatomically challenging aortic disease.

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Case Study
Medanta - Noida

Robotic Surgery for Early Endometrial Cancer

Hysterectomy with Sentinel Lymph Node Biopsy in a High-Risk Patient

Endometrial cancer is the most common gynaecological malignancy affecting postmenopausal women. Surgery remains the primary treatment for early-stage disease; however, obesity and multiple medical comorbidities may increase perioperative risk. Robotic-assisted surgery offers a minimally invasive approach that enables precise dissection, enhanced visualisation and faster postoperative recovery in appropriately selected patients.

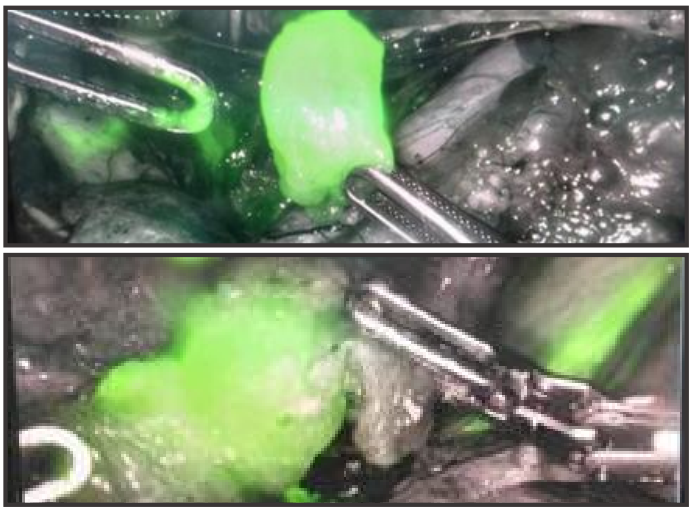
Clinical Presentation

A 66-year-old postmenopausal woman presented to Medanta - Noida with postmenopausal bleeding. She was a known case of diabetes mellitus, hypertension and hypothyroidism, and had obesity (body mass index 32 kg/m^2), placing her at increased perioperative risk.

Endometrial biopsy confirmed Grade 2 endometrial carcinoma, and transvaginal ultrasonography demonstrated a thickened endometrium measuring 10 mm. Following preoperative evaluation, the patient was planned for robotic surgical staging.

Surgical Management

The patient underwent robotic hysterectomy with bilateral salpingo-oophorectomy and sentinel lymph node biopsy.



Sentinel lymph node biopsy using fluorescence-guided mapping

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Resected specimen following robotic hysterectomy with bilateral salpingo-oophorectomy

Following docking of the robotic platform, pelvic dissection was performed using high-definition three-dimensional visualisation and articulated robotic instruments, enabling meticulous dissection through a minimally invasive approach. Sentinel lymph node mapping was performed using a fluorescent dye to identify the first draining lymph nodes. The identified sentinel lymph nodes were excised and sent for histopathological examination, enabling accurate nodal staging while avoiding the morbidity associated with complete pelvic lymphadenectomy.

The procedure was completed successfully.

Recovery and Outcome

The postoperative recovery was uneventful, and the patient was discharged within 24 hours of surgery.

Final histopathological examination confirmed endometrioid endometrial carcinoma (Stage IB, Grade 2) with tumour-free surgical margins. Sentinel lymph nodes were negative for malignancy. The patient remained well on follow-up.

Discussion

Robotic-assisted surgery has become an established minimally invasive approach for the management of selected gynaecological malignancies, particularly in patients with obesity and multiple comorbidities. Superior three-dimensional visualisation and wristed instrumentation facilitate precise surgical dissection while reducing intraoperative blood loss, postoperative pain and length of hospital stay.

Sentinel lymph node biopsy has further refined surgical staging by accurately assessing nodal status while reducing the morbidity associated with complete pelvic lymphadenectomy, including lymphoedema and other lymphatic complications.

Clinical Perspective

This case highlights the role of robotic-assisted surgery in managing early-stage endometrial cancer in a patient with multiple medical comorbidities. The combination of robotic hysterectomy and sentinel lymph node biopsy enabled comprehensive surgical staging through a minimally invasive approach, facilitating early postoperative recovery and discharge within 24 hours.

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Senior Consultant - Gynaecology and Gynae-oncology

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Case Study

Medanta - Patna

Left Upper Lobectomy for Primary Lung Adenocarcinoma

First Lung Cancer Surgery Performed at Medanta - Patna

Synchronous dual primary malignancies require careful diagnostic evaluation and multidisciplinary treatment planning to optimise the sequencing of treatment. Anatomical lobectomy with systematic mediastinal lymph node dissection remains the standard surgical treatment for resectable primary lung cancer. This case highlights the successful surgical management of primary lung adenocarcinoma in a patient undergoing treatment for synchronous endometrial carcinoma.

Clinical Presentation

A 65-year-old postmenopausal woman initially presented with postmenopausal bleeding and was diagnosed with Grade 3 endometrioid adenocarcinoma of the

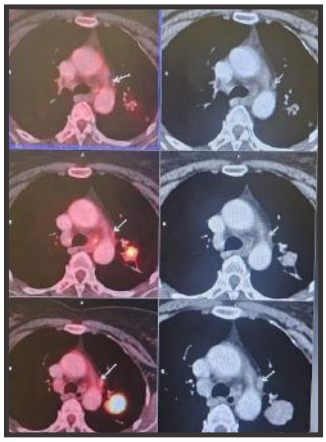
endometrium. During staging investigations, PET-CECT of the thorax revealed a suspicious lesion in the left upper lobe of the lung.

CT-guided biopsy confirmed primary pulmonary adenocarcinoma. Immunohistochemistry of the lung lesion was positive for TTF-1 and negative for PAX8 and ER, confirming a primary lung malignancy. Next-generation sequencing (NGS) demonstrated an EGFR mutation. EBUS-guided fine needle biopsy ruled out mediastinal lymph node involvement, establishing the diagnosis of synchronous dual primary malignancies involving the endometrium and lung.

Following multidisciplinary tumour board discussion, a staged treatment strategy was adopted. The patient first underwent robotic hysterectomy with bilateral salpingo-oophorectomy for endometrial carcinoma. Histopathology revealed Grade 2 endometrioid adenocarcinoma (pT1N0M0, FIGO Stage IA). This was followed by systemic chemotherapy with cisplatin and pemetrexed, along with targeted therapy using gefitinib, after which she was evaluated for definitive surgical management of the lung malignancy.

Restaging Evaluation

Whole-body PET-CT performed following completion of systemic therapy demonstrated a residual FDG-avid lesion in the left upper lobe, with no evidence of residual or recurrent endometrial malignancy or FDG-avid disease elsewhere. In view of the favourable treatment response and absence of distant metastatic disease, the patient was considered suitable for curative surgical resection.



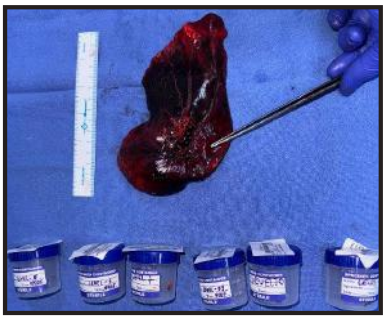
PET-CT showing an FDG-avid prevascular lymph node

Surgical Management

The patient underwent left posterolateral muscle-sparing thoracotomy with left upper lobectomy and systematic mediastinal lymph node dissection.

Intraoperatively, no pleural or mediastinal deposits were identified. A cicatrising lesion was noted in the left upper lobe near the posterior fissure, along with an enlarged adherent aortopulmonary window lymph node and enlarged left hilar and segmental lymph nodes. Meticulous hilar dissection was performed with sequential division of the branches of the left pulmonary artery supplying the upper lobe, followed by division of the left superior pulmonary vein and left upper lobe bronchus. Systematic dissection of N1 and N2 lymph node stations was completed while preserving the left phrenic and recurrent laryngeal nerves. Haemostasis was secured, and complete anatomical left upper lobectomy with systematic mediastinal lymph node dissection was successfully performed. The resected specimen was sent for histopathological examination.

Intra-operative image showing the hilar view following left upper lobectomy



Specimen of left upper lobectomy and systematic lymph node dissection

Recovery and Outcome

The patient was transferred to the intensive care unit following surgery and was successfully extubated on the first postoperative day. During recovery, she developed hoarseness of voice secondary to transient left vocal cord immobility. ENT evaluation confirmed left vocal cord dysfunction, following which she underwent speech and swallowing rehabilitation, with gradualimprovement in voice during follow-up.

Final histopathological examination revealed moderately differentiated adenocarcinoma with one aortopulmonary window lymph node positive for metastasis. The patient has been referred for adjuvant therapy to complete treatment.

She recovered well, remained clinically stable, and was discharged for further oncological follow-up.

Discussion

The management of synchronous primary malignancies required careful multidisciplinary planning to determine the optimal sequence of treatment for both cancers. Following systemic therapy, definitive surgical resection of the lung malignancy was undertaken. Enlarged hilar and mediastinal lymph nodes, together with the tumour's proximity to the hilar structures, made the procedure technically challenging. Careful hilar dissection and systematic mediastinal lymph node clearance enabled complete anatomical resection while preserving the recurrent laryngeal and phrenic nerves.

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Clinical Perspective

This case highlights the feasibility of definitive surgical management for primary lung adenocarcinoma in patients with synchronous malignancies following appropriate multimodality treatment. It also marked an important milestone as the first lung cancer surgery performed at Medanta – Patna.

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Case Study
Medanta - Gurugram

Pre-radiotherapy Dental Clearance in a Centenarian

Surgical Management of an Embedded Root Stump prior to Treatment for Oropharyngeal Carcinoma

Comprehensive dental assessment and clearance form an essential component of treatment planning for patients undergoing radiotherapy for head and neck cancers. Existing oral infections, retained root stumps and teeth with poor prognosis should be identified and managed before treatment to minimise the risk of osteoradionecrosis, infection and interruptions to therapy. This case highlights the successful dental optimisation of a 100-year-old patient before planned radiotherapy for oropharyngeal carcinoma.

Clinical Presentation

A 100-year-old patient with carcinoma of the oropharynx was referred for dental evaluation before planned radiotherapy. The patient presented with pain in the left lower posterior region of the jaw for the past few days.

Clinical examination did not reveal any clinically visible root structure in relation to tooth 35. An orthopantomogram (OPG) was advised for further evaluation.

Dental OPG showing apical periodontitis with respect to tooth 35

Evaluation and Diagnosis

Radiographic examination revealed an embedded root stump in relation to tooth 35 associated with apical periodontitis.

In view of the planned radiotherapy, surgical extraction was undertaken to eliminate a potential source of chronic oral infection before treatment.

Clinical Management

The patient underwent surgical extraction of the embedded root stump in relation to tooth 35. The extraction site was closed with sutures to facilitate healing, and a seven-day course of antibiotics was prescribed along with routine postoperative instructions.

The patient remained haemodynamically stable during the post-procedure observation period and was discharged after 30–45 minutes of observation.

Recovery and Outcome

The postoperative recovery was uneventful. Soft tissue healing was achieved within 7–14 days without evidence of local infection or wound-related complications. Following satisfactory healing of the extraction site, the patient proceeded with the planned course of radiotherapy.

Discussion

Pretreatment dental optimisation is an integral component of the management of patients undergoing radiotherapy for head and neck cancers. In this patient, the presence of an embedded root stump with apical periodontitis necessitated surgical extraction before radiotherapy to minimise the risk of treatment-related oral complications and avoid interruption of planned oncological treatment.

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Management of centenarian patients requires careful clinical assessment and treatment planning, balancing procedural safety with the need to optimise oral health before treatment. With appropriate patient selection and perioperative care, essential oral surgical procedures can be safely performed even in very elderly patients.

Clinical Perspective

Timely pre-radiotherapy dental optimisation facilitates definitive oncological treatment while minimising treatment-related oral complications. This case also demonstrates that advanced age alone should not preclude essential oral surgical intervention in appropriately selected patients.

Dr. Vandana Sehgal
Senior Consultant - Dental Sciences
Medanta - Gurugram

Welcome Onboard

Dr. Rajiv Ranjan

Associate Director - Paediatrics
Medanta - Patna

Dr. Ranjan specialises in general paediatrics, neonatology and neonatal intensive care, with expertise in managing critically ill and premature newborns, developmental supportive care, childhood illnesses, growth and developmental disorders, and preventive paediatrics.

Dr. Rekha Mishra

Associate Director - Non-Invasive Cardiology
Medanta - Noida

Dr. Mishra specialises in non-invasive cardiology, with expertise in adult and paediatric echocardiography, structural heart imaging, transoesophageal and stress echocardiography, intraoperative imaging guidance and Holter monitoring.

Dr. Satyendra Narayan Singh

Associate Director - Radiology and Imaging
Medanta - Patna

Dr. Singh specialises in diagnostic and oncological imaging, with expertise in head and neck, breast, musculoskeletal, chest and gastrointestinal imaging, as well as CT, MRI, ultrasound and image-guided interventions.

Dr. Neha Singh

Senior Consultant - Radiology and Imaging
Medanta - Patna

Dr. Singh specialises in diagnostic radiology, with expertise in antenatal and foetal imaging, ultrasonography, CT, MRI and cross-sectional imaging for the diagnosis of a wide range of clinical conditions.

Dr. John Mathew K

Senior Consultant - Paediatric and Adult Cardiac Surgery
Medanta - Gurugram

Dr. Mathew specialises in adult cardiac surgery, with expertise in coronary artery bypass grafting, heart valve repair and replacement, adult congenital heart disease, vascular surgery and ECMO support.

Dr. Gaurav Seth

Senior Consultant - Clinical Immunology and Rheumatology
Medanta - Noida

Dr. Seth specialises in autoimmune and inflammatory disorders, with expertise in inflammatory arthritis, lupus, vasculitis, connective tissue diseases, biologic therapies, musculoskeletal ultrasound and ultrasound-guided joint procedures.

Dr. Nikhil Jha

Consultant - Clinical and Preventive Cardiology
Medanta - Gurugram

Dr. Jha specialises in clinical and preventive cardiology, with expertise in coronary artery disease, heart failure and complex coronary interventions.

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Dr. Rajanikant Kumar

Consultant - Cardiovascular and Thoracic Surgery (CTVS)

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Dr. Kumar specialises in adult and paediatric cardiovascular surgery, with expertise in congenital heart surgery, coronary artery bypass grafting and valve surgery.

Dr. Himanshu Tripathi

Associate Consultant - Nephrology and Kidney Transplant Medicine

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Dr. Tripathi specialises in nephrology and kidney transplantation, with expertise in chronic kidney disease, dialysis therapies and kidney transplant care.

Dr. Utkarsh Yadav

Associate Consultant - Interventional Radiology

Medanta - Lucknow

Dr. Yadav specialises in interventional radiology, with expertise in neurovascular and peripheral vascular interventions, including image-guided minimally invasive procedures.

Dr. Sheetal

Visiting Consultant - Dermatology

Medanta - Gurugram

Dr. Sheetal specialises in acne, pigmentary disorders, hair loss and autoimmune skin conditions, with expertise in dermatosurgery, laser procedures, PRP therapy, chemical peels and anti-ageing treatments.

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