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Case Study **No 01**

mimit midwest institute for **minimally invasive** therapies

Roadmap for a successful Office-Based Lab

Midwest Institute for Minimally Invasive Therapies, Chicago, IL, USA

OFFICE-BASED LABS (OBLs)

Alternative care models

Alternatives to traditional patient care are evolving in response to the world's aging population. Gone are the days of diagnosis and treatment in a cold, sterile hospital setting. Across the United States, alternatives to hospital practices are seeing substantial growth.

Office-based labs (OBLs) are one such option. Also known as office interventional suites, OBLs are being opened by vascular surgeons, interventional radiologists and other physicians who have an interest in a delivery-care model that is patient centered in an office-based setting.

> At Midwest Institute for Minimally Invasive Therapies (MIMIT), our goal is to help people live healthy and happy lives. We strive to educate and empower patients and their families to make a decision that is best for the patient. But we also have to run our business and staff.

Paramjit "Romi" Chopra, MD, Founder and Medical Director of MIMIT, Chicago, IL, USA

DR. PARAMJIT "ROMI" CHOPRA

The man behind the Office-Based Lab

Dr. Paramjit "Romi" Chopra is an interventional radiologist with over 30 years' experience in the field of interventional radiology and endovascular therapy. The standards for his daily work were set after completing his medical studies and training in Mumbai, India, followed by his fellowship and residency at Brigham and Women's Hospital and Harvard Medical School in the US.

After working extensively in academia and research, Dr. Chopra became one of the youngest heads of an interventional radiology department in the US. Eager to share his experience, he placed great emphasis on training and introduced a wide range of education and research programs for students, colleagues and residents. At the same time, however, he was committed to keeping the focus firmly on patient needs at all times.

Dr. Chopra opened the Midwest Institute for Minimally Invasive Therapies (MIMIT) in 2004. As an interventional radiology and endovascular therapy practice, MIMIT specializes in minimally invasive treatments for arterial disease such as peripheral artery disease (PAD), uterine fibroid disease (UFE), venous disease and musculoskeletal disease (spine interventions). Blending his eastern roots and extensive western experience, Dr. Chopra unifies the best of both worlds. His in-depth understanding of complex patient conditions is backed by state-of-the-art treatment therapies, enabling him to deliver exceptional patient care of the highest quality.

Dr. Chopra believes the path to long-term success lies in treating patients' spirit, mind and body – not just their medical conditions. His institute has given him the opportunity to create a well-thought-out environment where patients and their families can feel calm, get the information they need and be treated with cutting-edge healthcare technologies.

SIX PILLARS OF SUCCESS

Establishing the Office-Based Lab

OBLs started to emerge over a decade ago. Today, there are an estimated 500 labs across the United States.[1] Medical associations such as the Outpatient Endovascular and Interventional Society (OEIS),[2] as well as physicians, the industry as a whole and patients, all recognize the value of OBLs. However, opening a new office-based lab is a complex undertaking that requires considerable planning. Although entrepreneurship runs in Dr. Chopra's blood, he still spent a year developing a successful business plan and met with colleagues who had opened their own OBLs, gaining valuable insight and guidance along the way.

This hands-on experience led him to identify six pillars of success for OBLs:
– Excellent patient care
– Excellent patient satisfaction
– Excellent employee satisfaction
– Maintaining fiscal responsibility
– Constant innovation
– Systems to sustain these 5 pillars

In order to best meet these requirements from an imaging perspective, Dr. Chopra chose the Ziehm Vision RFD Hybrid Edition[3] C-arm. This system offered Dr. Chopra features most comparable to a fixed imaging room in a hospital but without the cost or complexity. Key elements like the latest flat-panel detector technology with a large field of view, motorization in all four axes and a powerful generator were all factors in his decision.

As the technology of mobile C-arms like the Ziehm Vision RFD Hybrid Edition[3] pushes the limits of conventional procedures and further rivals fixed imaging equipment, OBLs will become more successful and be able to offer more expanded procuedures, which attracts both physicians and patients to a practice. For the future of MIMIT, Dr. Chopra says he sees "growth and new locations," and the continued ability in his OBL to connect with patients on a person-to-person level, which has been one of his guiding principles in medicine from the start.

TAKING THE NEXT STEP

Running a successful Office-Based Lab

Dr. Chopra opened his first office-based labs in 2015. For him, it really was a dream come true. The OBL gave him the opportunity to treat patients in a hospital-like environment but with the same philosophy that shaped his work at MIMIT.

The initial labs were setup in three locations, reinforcing Dr. Chopra's commitment to take his care to patients rather than forcing them to come to him. In line with the six pillars, Dr. Chopra also developed a sound financial plan. By managing the finances responsibly, he ensures that the OBL isn't just a great place to treat patients but that it's also a great place to work. This allows him to attract staff he can rely on for his daily clinical practice. He works hand in hand with an experienced team that has spent many years working with him. Dr. Chopra and his team visit the three locations every week, ensuring consistent quality of care and standardized workflows at all locations.

Every system and process in the OBL is optimized; this includes connecting everything and everyone over the cloud. This saves money every day and opens up further process optimization potential within his team and workflows. These savings also translate into real benefits for patients in the form of shorter waiting times, shorter hospital stays, faster referral communication and better clinical outcomes.

Overall, the OBL has increased patient comfort and convenience. It has given Dr. Chopra greater administrative oversight and allowed him to develop better schedules for doctors and other staff. He believes he can work more effectively outside of a hospital environment. "This is my office," says Dr. Chopra about MIMIT. "I try to think like patients who are looking for help. We can give them this help, but even more effectively and in a more personal environment," he adds.

ZIEHM VISION RFD HYBRID EDITION

Forward thinking with a mobile hybrid OR in an Office-Based Lab

When it came to choosing imaging equipment, Dr. Chopra knew that superior imaging devices would be the most important success factor for his business as both the MIMIT and the office-based labs specialize in minimally invasive treatments. After a short evaluation period, MIMIT selected Ziehm Imaging as its vendor of choice. In the words of the founder and medical director, Dr. Chopra: "We saw that Ziehm Imaging is the technology leader in mobile imaging."

MIMIT chose the Ziehm Vision RFD Hybrid Edition³, a powerful 25 kW mobile C-arm, which is more than capable of meeting the needs of Dr. Chopra's challenging procedures. Because the Ziehm Vision RFD Hybrid Edition³ utilizes a square flat-panel detector of 30 cm x 30 cm, Dr. Chopra could see roughly 50 percent more image information without distortion compared to a conventional round image intensifier (II).[4] The exceptional contrast resolution of the flat-panel detector gives Dr. Chopra the ability to visualize even the smallest details of anatomy, helping to minimize risk and patient complications.

Maximum uptime was also critical for Dr. Chopra and the staff at MIMIT. Ziehm Imaging offers an established direct service organiation with tailored service solutions and 24/7 technical phone support in the US. The Ziehm Vision RFD Hybrid Edition³ gives MIMIT the flexibility to deliver the best image quality at any location and at any time.

Easy setup and reduced operating costs are key factors in both a hospital setting and office-based lab. The Ziehm Vision RFD Hybrid Edition³ can be set up in any room without any special adaptations or preparations and has a compact footprint. In addition, the Ziehm Vision RFD Hybrid Edition³ provides a user interface with simple controls and easy access between frequently used functions like fluoro, digital subtraction and road mapping, which speeds up the clinical workflow. Featuring the latest imaging technologies, the C-arm is a comprehensive mobile solution enabling hybrid procedures in office-based environments.

> Ziehm Imagings' innovative flat-panel technology allows us to perform various minimally invasive procedures demonstrating great anatomical detail that was only available in fixed labs. It is a game changer for us to provide better outcomes with same-day services in our OBLs.

Jorge Arellano, R.T. (R)
Chief Technologist, MIMIT

CASE REPORT

Quality patient care

A 68-year-old woman presented with severe peripheral arterial disease (PAD) and has been a heavy cigarette smoker for over a decade. She had previously been treated at another hospital, where doctors implanted a bare metal stent in the superficial femoral artery, and was now complaining of severe pain at rest in her lower left extremity. She had also had a stent placed in her common iliac artery, which made it difficult to treat the superficial femoral artery (SFA) from the right contralateral common femoral artery.

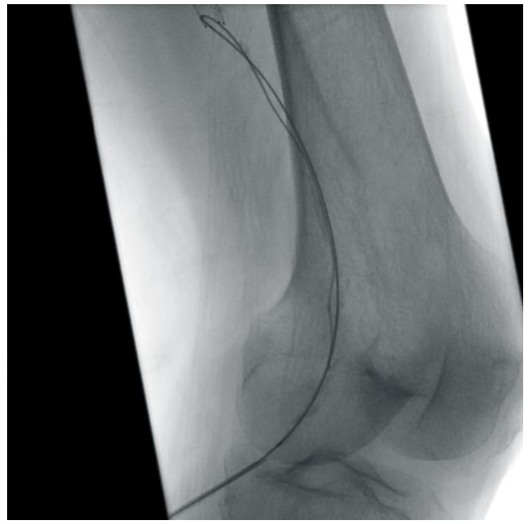
A previous arteriogram showed extensive occlusion of the entire left superficial femoral artery and proximal popliteal artery. The treatment options were a femoropopliteal bypass or revascularization of the SFA via popliteal artery access. Dr. Chopra decided to perform a complete revascularization.

The left popliteal artery (P3 segment) was accessed using a micropuncture needle under ultrasound guidance. A wire and catheter were passed through the occlusion of the SFA all the way into the iliac artery and, from there, into the aorta. An intravascular ultrasound was performed of the entire popliteal artery, superficial femoral artery, common femoral artery and the iliac arteries.

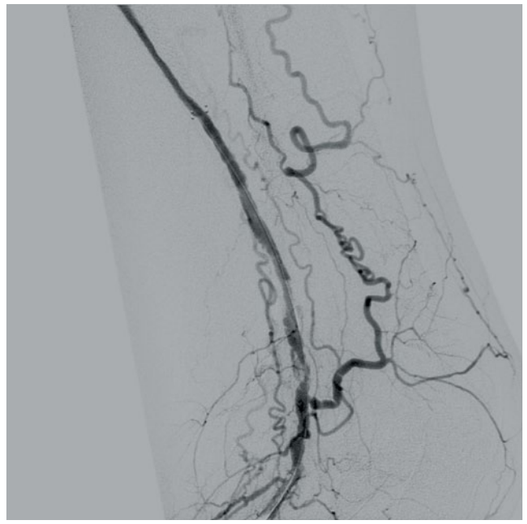
The external iliac artery had a stenosis greater than 75 %. The SFA and proximal popliteal arteries had heavy calcification and extensive plaque. As a result, a laser atherectomy of the entire SFA was performed. This was followed by an angioplasty of the entire SFA and popliteal artery using a 6 mm x 20 cm balloon. The entire SFA was then covered with a 6 mm x 15 cm SUPERA® peripheral stent system.

The external iliac artery stenosis was treated with intravascular ultrasound, angioplasty and bare-metal stent placement. The patient received 5,000 units of heparin intravenously during the procedure. The popliteal artery sheath was removed and hemostasis of the popliteal artery access site was achieved through manual compression.

At the end of the procedure the patient had palpable 2+ pulses in the dorsalis pedis artery. In the recovery room, the patient stated she had complete relief from the pain in her lower left extremity.



Popliteal artery access under ultrasound, chronic total occlusion crossed through previously placed stents with guide wire



Angiogram through popliteal artery sheath, occluded previosly placed stents and extensive collaterals

Laser artherectomy performed in-stent restenosis

Post artherectomy of stent placement.
Left superficial artery residual stenosis is 0 %.

[1] Jeffrey G. Carr, MD, "Navigating the Rising Waters in Healthcare: The Office Based Interventional Suite as an Innovative Model," Global Vascular Digest, April 2015 Issue, http://www.globalvasculardigest.com/april-2015-issue/navigating-the-rising-waters-in-healthcare-the-office-based-interventional-suite-as-an-innovative-model/

[2] The Outpatient Endovascular and Interventional Society – www.oeissociety.org

[3] The Ziehm Vision RFD Hybrid Edition represents a group of optional hardware and software that creates an option package on the device named Ziehm Vision RFD.

[4] Comparison of conventional Ø 12" image intensifier and 30 cm x 30 cm flat-panel detector

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