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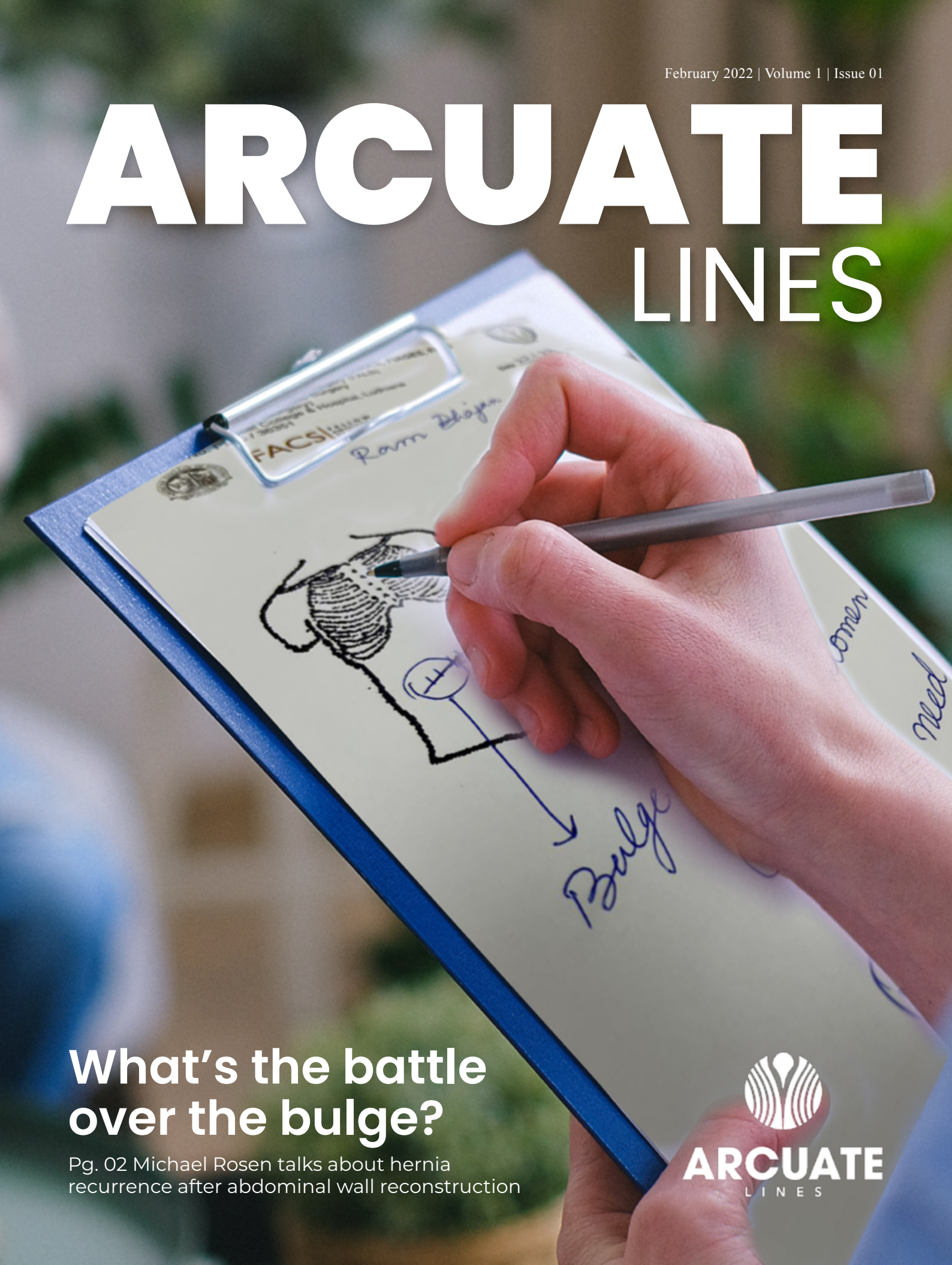
ARCUATE LINES



What's the battle over the bulge?

Pg. 02 Michael Rosen talks about hernia recurrence after abdominal wall reconstruction

ARCUATE LINES

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Editorial

Why Arcuate Lines

In the new year, we are facing new problems, not yet having rid ourselves of old ones. Our lives as surgeons are centered around problems with patients, administrators, publishers, insurance companies and hospital committees even as we navigate our personal, health and family issues.

Why then, among all this and amidst a pandemic, do we introduce *Arcuate Lines?* Is this a new addition to the Rogue's Gallery of unnecessary complications of life, where all things Government take pride of place?

Hopefully not.

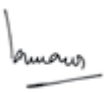
In the real world, there are geographical barriers to communication, learning, sharing, and progression in careers. The surgeon of the First World may not realize this, nor may a successful surgeon in any country. But the bitter reality is that a surgeon born in a geographical entity is bound and defined by it through life. Arcuate Lines (AL) is an attempt to break these barriers down by bringing everyone together – from the celebrity to the unsung surgeon – in a global platform of friendship and free speech. These Arcuate Lines of communication should connect us, wherever we are.

In this inaugural issue, we focus on Mike Rosen's published abstract *No Winning the Battle of the Bulge* that has fuelled a social media debate among surgeons. Clearly, there's a lot to consider. Critics dismiss the contention while old IPOMers are licking their chops in glee. What exactly is the storm about?

Charlotte Horne, AL's Executive Editor, outlines hernia recurrence, which is not a self-evident topic and needs nuanced understanding before we condemn or applaud the results of others. Wolfgang Reinpold details his role in the evolution of the MILOS and eMILOS procedures and outlines his contribution to the dynamic history of retromuscular ventral hernia surgeries. Reinpold takes the discussion ahead into contemporary history, much beyond obscure names like Aquaviva and Albanese highlighted earlier in this article.

AL is not going to be only about surgery. Our multiverse is made of more than that. Therefore, technology, skills, travel and fitness form the various sections of the magazine. In this issue, don't miss Spanish plastic surgeon Jose Castello chronicling his foray into wildlife photography with some stunning images.

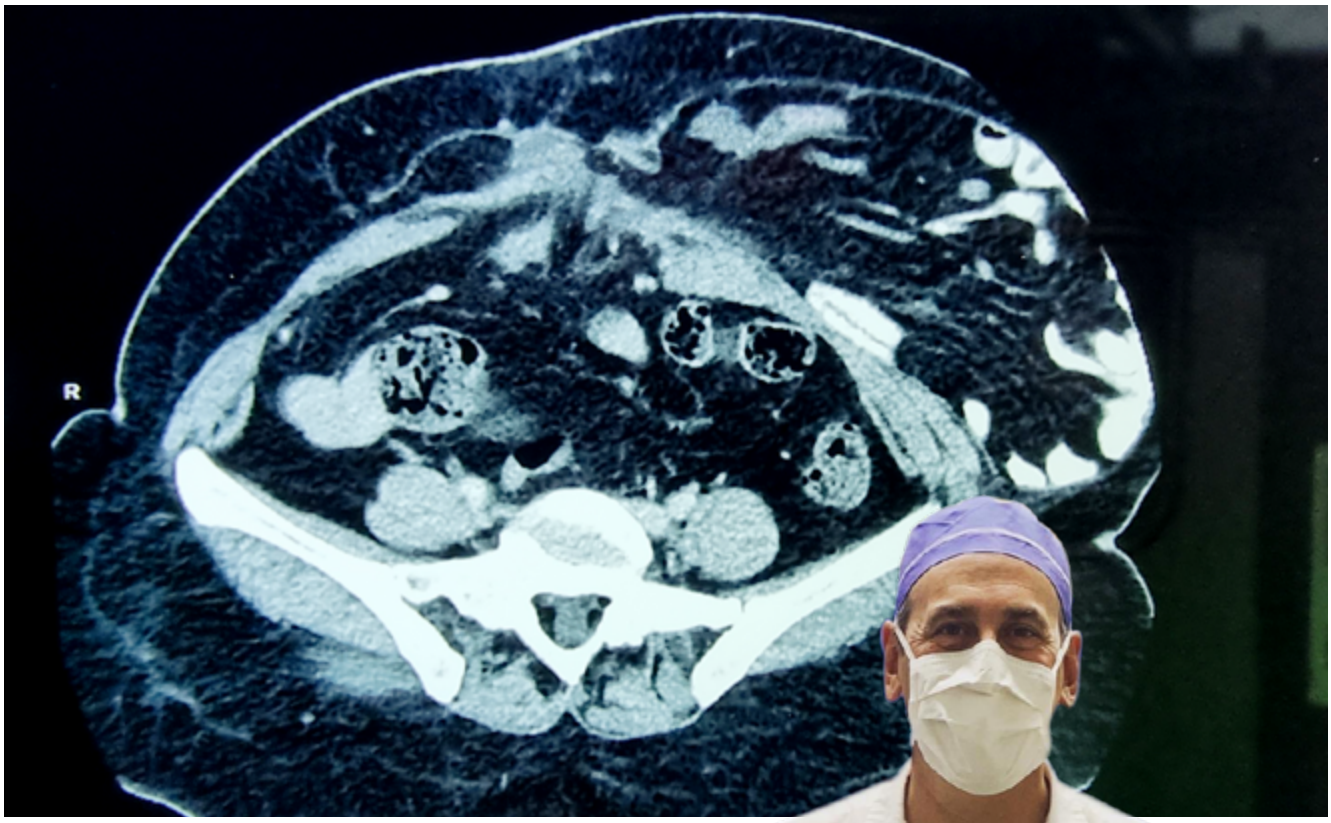
We look forward to your comments and feedback. Please feel free to email your articles or comments to the editors at arcuatelines@gmail.com.



B. Ramana
Editor-in-Chief, Arcuate Lines

What's the battle over the bulge?

Charlotte Horne & B. Ramana



B. Ramana

CT scan showing a large recurrent hernia

M. J. Rosen

Michael Rosen is the section head of the Abdominal Core Health Division and Director of Surgical Operations at the Cleveland Clinic. His team presented the outcomes after transversus abdominis release (TAR) at the 2021 American College of Surgeons meeting. Their abstract "No Winning the Battle of the Bulge: Hernia Recurrence after Abdominal Wall Reconstruction" has caused quite a stir on social media. Rosen shares the import of this abstract with Charlotte Horne and B. Ramana.

(Edited for readability, full interview here.)

Charlotte Horne: What made you look into your hernia recurrence rates? What

made you not believe the data that was out there already?

Michael Rosen: I think the most important thing about anyone who does any procedure, certainly if you do a procedure a lot, is to take a moment and pause and actually figure out what your results are. So, when we looked at this, to be honest, I thought our results would be better than what they were. And a lot of this was just to look at what our outcomes are. I think the learning here is that long term follow-up is humbling, especially in hernia surgery. I think there are a lot of nuances and complexity in understanding the results, but the short answer is it certainly wasn't what we thought it would be.

CH: In the abstract you have composite recurrence, so how did you define recurrence in this study?

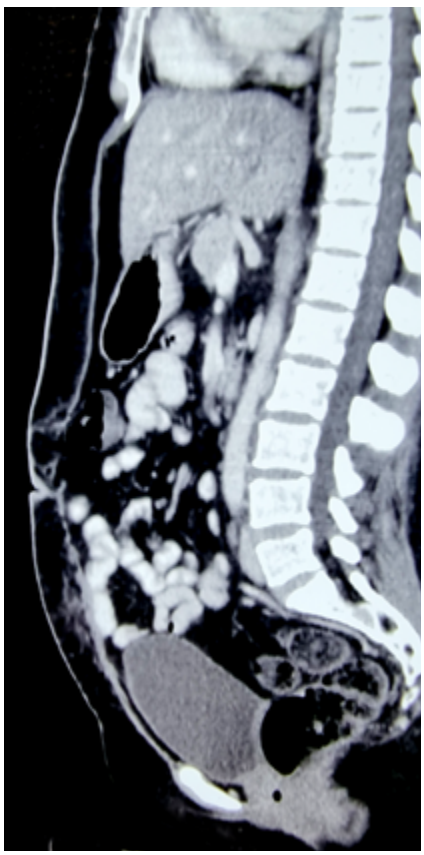
MR: Recurrence is, as one of the things that I have learned over the last 5 to 7 years of running clinical trials, much more complicated of a diagnosis to make. It is one of the things that has really hampered our ability to appropriately interpret the literature and set reasonable expectations for ourselves and for our patients. When you think about recurrence, there are a lot of different perspectives that don't always align. Some of the things that we think are gold standard, don't necessarily have 100% specificity or 100% sensitivity.

So, in this trial, we have every CT scan reviewed by 3 blinded surgeons with expertise in abdominal wall reconstruction. They are blinded to the technique, they are blinded to the surgeon, they are blinded to the mesh, and we still don't get 100% agreement on what a recurrence is. The other way we look at it (recurrence), is a clinical exam by the surgeon and the final piece is the patient's perspective as to whether or not they feel they have a hernia or feel that they have a bulge in the area. Where things get even more complicated, and why this is hard to report, is that sometimes patients have all three (CT, clinical exam and questionnaire) and all three don't agree. Sometimes patients have two of the three and they don't agree and sometimes they have one of them and, let's just say, it's the bulge question and maybe that's the most sensitive, but not necessarily the most specific.

The best way that we have found to report recurrence is as a confidence interval from perhaps the most specific test to the most sensitive test, and so we report a composite score. So, this was 1400 patients, and they all don't have clinical exams or CT scans. So a lot of them have patient reported outcomes only. This is heavily biased to potentially the bulge question. At the end of the day, the people with the bulges didn't have normal abdominal wall function so a bulge is not an irrelevant finding.

CH: What would you say is your true marker of recurrence? Is it what you see on a CT scan? Is it "my patient is very satisfied, they don't see a bulge"?

MR: I think as a group of hernia surgeons, we should move away from recurrence. If you look at a lot of other studies that report recurrence rate based on administrative data, where they look at if you had another operation for your hernia, you may be missing 30% of the recurrences. That may be the most clinically relevant. Then we are supposed to compare one study with the next. I think a better thing moving forward,



B. Ramana

A small recurrent hernia

Charlotte Horne

B. Ramana

is looking at a decision regret scale, that actually measures a patient's regret for having an operation and ultimately, isn't that the most important measure. At the end of the day, if the patient is happy with their outcome, that is all that should matter.

B Ramana: The importance that you give to a patient feeling a bulge and worrying about a recurrence, I suspect that if you track 1000 patients from India or other parts of Asia, that unless they have pain or an obvious hernia, they probably wouldn't notice it. So for them, the equivalent operations will become much more successful in that sense. So wouldn't this introduce a lot of subjectivity in analyzing outcomes in your patient population?

MR: Based on our data, you would actually be wrong, and I actually thought the same thing you did. These people are just saying they have a bulge and it's not clinically relevant. So, we broke the data up to answer this specific question. The people that had a bulge and did not have a clinical exam or radiographic recurrence were compared to people that didn't have a bulge and didn't have a clinical or radiographic recurrence. We compared them based on their HerQLes score, which is a measure of abdominal wall function, and they were statistically different. The people that had a bulge had worse abdominal wall function than the people who did not have a bulge. So what that tells me is that these are clinically relevant, and these bulges do affect these patients. While it may or may not require reoperation, we all need to take a pause and think, is this the cure we really thought it was?

See the full interview breaking down the abstract and discussing other controversial topics here.

From scorpion research to medical statistics

Charlotte Horne

In this issue, we profile Michael Rosen, Professor of Surgery and Section Head of the Abdominal Core Health Division at the Cleveland Clinic, Ohio, USA.

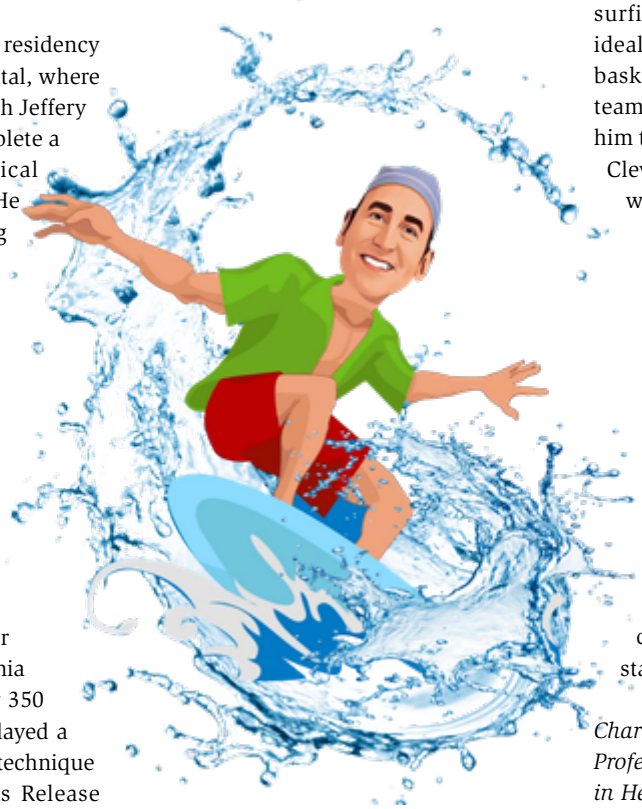
Michael Rosen is well known for advancing hernia surgery globally. However, fixing hernias wasn't always at the forefront of his professional ambitions.

Rosen was accepted into medical school at the University of Southern California, but deferred his joining the school for a year. Instead, he spent 6 months on the Skeleton Coast of Namibia researching scorpions. For the next six months, he worked in a service shop in Vail, Colorado, where he met his spouse. The quaint ski resort town now serves as the location of the annual "Updates in General Surgery" Conference, which Rosen helms.

After medical school and a residency at Massachusetts General Hospital, where he spent two research years with Jeffery Ponsky, Rosen went on to complete a fellowship at Carolinas Medical Center under Todd Heniford. He then moved to Cleveland taking his first professional position at Case Western University. He did not start as a hernia surgeon but as a minimally invasive foregut surgeon. His mentor Ponsky's advice of investing and publishing in an area of surgery that no one was interested in redirected his attention to the complex abdominal wall, and slowly into hernias.

Rosen has served as a leader in advancing the practice of hernia surgery and currently has over 350 publications to his name. He played a key role in describing the new technique of the Transversus Abdominis Release (TAR) that revolutionized how surgeons approach complex hernia patients. He has a practice with one of the highest volumes of complex abdominal wall reconstructions worldwide. His hernia center, with a carefully curated team of surgeons, constantly and critically evaluates outcomes.

Rosen is actively involved in improving the quality of care and cost-effectiveness for hernia patients and is the co-founder of America's Core Health Quality Collaborative. While some of his data is controversial, he has created a practice where the significant majority of his patients are willing to participate in randomized controlled trials. Rosen is close to conquering the Achilles' heel of hernia literature: good long term follow up.



M. P. Katrak

M. J. Rosen

Rosen, however, is not all about hernias. He is an avid biker and has cruised across America. He is a strong advocate of work-life balance, and can often be found on his boat after a day of surgeries enjoying water skiing and wake surfing with his wife and three children. During Cleveland's not-so-warm months, his favourite vacation destination is Costa Rica, where he spends some more time surfing the waters. Ask him about his ideal job, and he will say a high school basketball coach. The desire to create a team-like atmosphere is what motivated him to build his huddle of surgeons at the Cleveland Clinic Center for Core Health, which he heads.

Rosen has been a prolific public speaker. Now, most of his traveling is to attend his son's baseball games and to visit his daughters in college. His love for sports and coaching led to the idea of an app that provides statistics about local baseball fields for teams, coaches and parents. As Rosen matures in his career, his new focus is to understand statistics to design and conduct research. He looks forward to attending a conference that's all about using statistics in research.

Charlotte Horne is currently an Assistant Professor of Surgery at Penn State Health in Hershey, Pennsylvania, USA.

The E/MILOS story

Wolfgang Reinpold

New minimal invasive techniques of extraperitoneal ventral hernia repair are hot in abdominal wall surgery. The excellent results of laparo-endoscopic inguinal hernia repair confirm with the highest level of evidence on the benefits of minimally invasive preperitoneal mesh repair [1-5].

It is generally accepted that the retromuscular/preperitoneal (sublay) space is best for mesh placement in abdominal wall hernia repair [6,7]. While open mesh techniques are burdened with higher wound infection rates, laparoscopic IPOM repair carries an increased risk of intraoperative bowel injury, adhesions, bowel obstruction, acute and chronic pain [6,7].

The problems and disadvantages of the open sublay repair and laparoscopic IPOM technique led us into exploring new approaches. Pioneers in this field first developed the laparoscopic transperitoneal sublay mesh repair for primary and incisional abdominal wall hernias [8]. In 2012, we published the first detailed description of a safe and reproducible retromuscular cross-over from one rectus compartment to the other [8]. The technique later popularized by Muysoms *et al*. as robotic Transabdominal Retromuscular Umbilical Plasty (rTARUP) was important for the development of several new minimal invasive trans- and extraperitoneal mesh repair techniques, including robotic procedures [9]. When performed with conventional laparoscopic instruments the procedure is technically demanding and these difficulties forced innovation.

We knew the extraperitoneal approach could be utilized as per Miserez *et al* [10]. We developed the Endoscopic Total Extraperitoneal Trans-hernial Single Port Sublay Mesh Repair of Ventral Hernias in 2009, the first trans-hernial minimal invasive technique for ventral hernias [11]. The endoscopic single port TEP repair was the first version of the Endoscopic Mini- or Less Open Sublay (EMILOS) operation. The terms MILOS and EMILOS were coined years later by Reinpold and Bittner.

E/MILOS stands for Endoscopically assisted Mini- or Less Open Sublay operation.

These are both minimal invasive hybrid procedures with an initial phase of trans-hernial mini open dissection, which is performed with light armed laparoscopic instruments (Fig. 1) under direct view or with gasless endoscopy. Procedures with capnopreperitoneum are defined as EMILOS operation, those without CO_2 endoscopy are denominated MILOS repair. Table 1 shows E/MILOS definitions.

The essential steps of the single port EMILOS operation are (Fig 2):

- a small incision above the main hernia defect and open dissection of the hernia sac
- diagnostic laparoscopy, and identification of the hernia ring
- circumferential preperitoneal and retromuscular dissection
- trans-hernial single port insertion and circumferential endoscopic single port dissection
- trans-hernial sublay mesh insertion and closure of the hernia defect (Fig. 3).

Improvements were needed in our technique and instruments. These included utilizing blunt tip mono ports (Fig. 4) e.g. Alexis™, and developing the light tube Endotorch TM together with Wolf company, Knittlingen (Fig. 1, 5). The E/MILOS technique is now highly standardized with standard instruments (Fig. 6). Furthermore, we developed E/MILOS procedures for TAR, lateral abdominal wall hernias, combined incisional (LM) hernias, and hernias with concomitant diastasis recti [12,13]. Schwarz *et al*. published a reversed ventral TEP EMILOS variant14.

Results: We examined our outcomes by conducting a prospective propensity score matching analysis of the German hernia

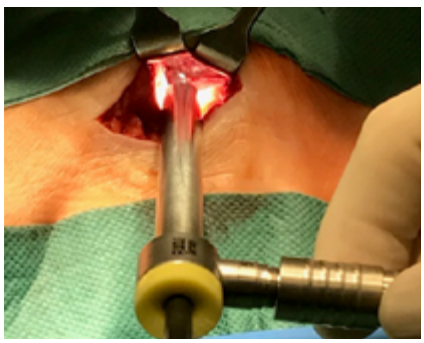
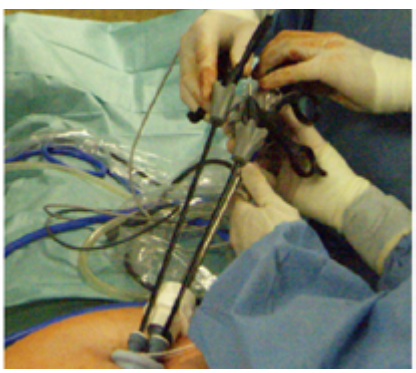


Figure 1: Transhernial dissection with laparoscopic forceps and Endotorch ™.



W. Reinpold

Figure 2: Transhernial endoscopic single port dissection.

Terminology	Description
Mini Open Sublay	Incision < 6 cm
Less Open Sublay	Incision 6 – 12 (The length of the skin is maximal one fourth of the maximal mesh diameter)
MILOS: Endoscopically assisted MILOS	Dissection with light armed laparoscopic instruments under direct or videoendoscopic view
EMILOS	Endoscopic dissection after establishment of extrapertioneal capno-pre-peritoneum

Table: E/MILOS Definitions.

database Herniamed 12. We compared our first 600 E/MILOS incisional hernia operations with open sublay and laparoscopic IPOM operations of other institutions. We reported significant less perioperative complications, reoperations, one-year recurrences and chronic pain after E/MILOS repair. The publication of 5-year results is in preparation. We have now performed more than 3500 E/MILOS procedures, all documented in Herniamed. The complications rates are very low, functional results are very good and patient satisfaction is very high. The E/MILOS repair can be performed with standard inexpensive open and laparoscopic equipment (Fig 6). The technique is especially interesting for health care systems with limited financial resources.

Today we use the E/MILOS technique for all primary and incisional abdominal wall hernias except for giant hernias with loss of domain and very small hernias (< 1.5 cm defect diameter). The minimal invasive hybrid approach allows easy resection of the hernia sac, implantation of large standard meshes, defect closure, scar corrections and umbilical reconstruction. The small incision does not add morbidity compared to pure laparo-endoscopic techniques.

In Germany, laparoscopic IPOM repair is on the decline, and about one-third of specialized hernia surgeons have begun to use the E/MILOS technique. Other new MIS techniques like eTEP are also becoming popular. Starting January 2022, the Herniamed update will allow detailed documentation of E/MILOS and other new MIS techniques of ventral hernia repair. Soon we will have more data on the new MIS techniques.

Prospects: Despite very promising results we will never stop looking for E/MILOS improvements – the phase of mini-open dissection could be improved with a microchip camera mounted to the tip of the Endotorch. More sophisticated laparoscopic suturing devices could improve the endoscopic part of the operation. The first rMILOS operations have been performed in the USA. New single port robots, which might use the trans-hernial approach, are on the horizon. Modern abdominal wall repair is very complex and teaching and training young surgeons is our most important goal for the future.

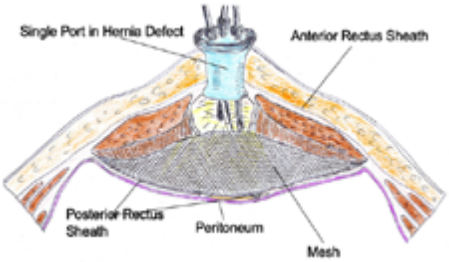


Figure 3: Endoscopic transhernial mesh implantation.

Figure 4: Blunt tip port for incisions up to 4 cm.

W. Reinpold

Figure 5: Transhernial flexible Monoport (Alexis ™) with 10 mm 30° Optic and two 5-mm working ports.

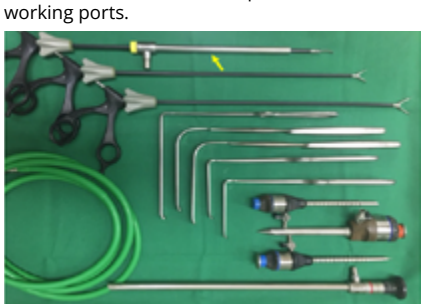


Figure 6: E/MILOS instruments: set of rectangular retractors, standard laparoscopic instruments, 10-mm 30° Optic, Endotorch ™ (arrow).

Conclusion: The MILOS and EMILOS operations comprise a minimal invasive trans-hernial total extraperitoneal mesh repair concept for almost all abdominal wall hernias. They allow the implantation of large sublay meshes and anatomic reconstruction of the abdominal wall with very low morbidity.

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Wolfgang Reinpold is the Chairman of the Department of Abdominal Wall Surgery Helios Mariahilf Hospital Hamburg and Chairman and CEO, Hamburg Hernia Center, Germany. His scientific interests are development of minimal invasive techniques for the extraperitoneal mesh repair of ventral and incisional hernias.

OR documentation: Keep it simple

Danny Rosin

Our world is constantly being Instagrammed and Facebooked, and surgery is no exception. Digital imaging, used for laparoscopic and robotic surgery, makes it only natural to keep a record of in the operation room (OR), video-recording being common. But recording every case is not always possible, and editing every movie is time-consuming. So what if you just want to capture a special image, or record just a very short clip to "catch the moment"? Instagrammers and Tik-Tokkers know the advantage of a short and focused message.

Luckily, all of us have a powerful photography and communication machine in our pockets, and with modern laparoscopic high-resolution optical equipment there's a simple and quick way to capture images – just take a picture of the monitor screen! What was in the past a poor man's replacement to expensive image capture devices can now be a very efficient way of transferring high-quality images to our fellow surgeons – whether we wish to educate our residents or just show-off on social media.

But point-and-click is not enough if we want to do it right. Low quality, blurred, off-center and oblique views of the screen rarely give joy to the viewer, hardly convey the message and often deprive us of the respect we are entitled to for an interesting case or cool technique.

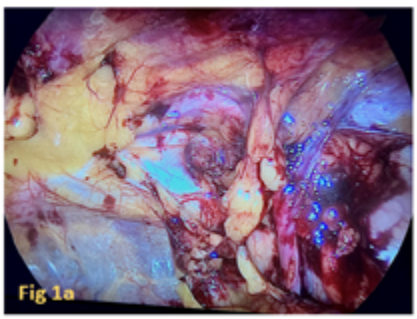
So, here are a few tips for you to achieve perfection. It will cost you zero shekels but need your full attention to detail.

Keep your mobile camera exactly parallel to the monitor's screen, and confine your image to the screen. You can turn on the assisting grid lines to make sure the image is straight. This way, you'll avoid distortion, and focus on what really matters: the image and not the anaesthesiologist sitting behind. Figure 1a. shows a pretty good click of a femoral defect, Figure 1b needs more practice. But if you give the task to a less than perfect photographer, the simple editing tools on your mobile can quickly improve the image, crop the area of interest, and correct distortions (Figure 1c). Use it before publishing.

1. **Before and after.** In some situations, the process is important- like the reduction of incarceration. Sure, a video will demonstrate it, but it may take some time to view and the last thing you want is to lose your audience out of boredom. Two still images, before (Figure 2a) and after Figure 2b) will show how successful you were (at least in this task).

2. **Arrange the scene.** Control your Image so that your focus area or movement can be clearly seen. If you have a nice view of the inguinal nerves, have your assistant retract the spermatic vessels to expose the target (Figure 3).

3. **Annotate.** What is clear to you during surgery may be too detailed and



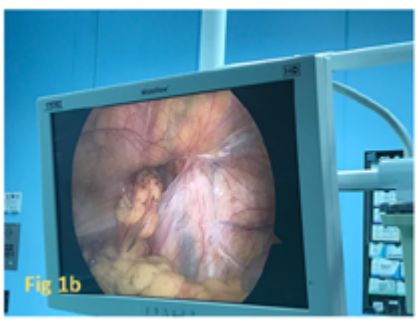
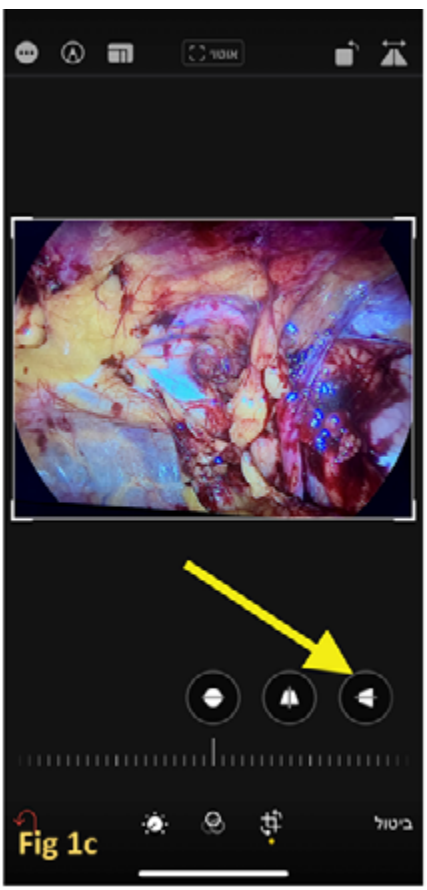


Figure 1a: A good click. A femoral hernia in the right groin. The image is straight, the hernia defect is in the middle of the frame, anatomical structures are included (but not yet labeled).

Figure 1b: Not such a good click. The image is oblique and contains unrelated background.

Figure 1c: Simple editing tools are a finger away.



D. Rosin

Figure 2a: Bowel incarcerated in groin hernia- before reduction.

Figure 2b: Hernia defect after reduction of the incarcerated bowel

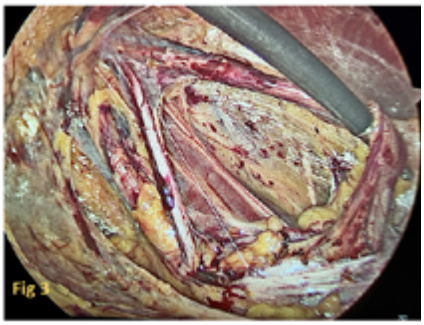


Figure 3: Nerves on theright groin, nicely visible when the testicular vessels are retracted away.

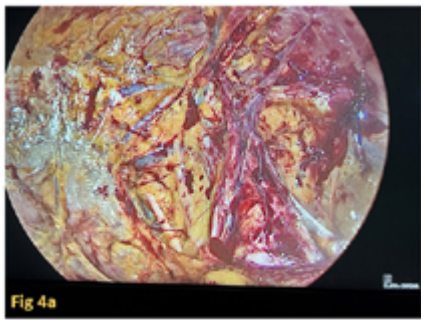


Figure 4a: Right Obturator nerve visible but lost in a multitude of structures.

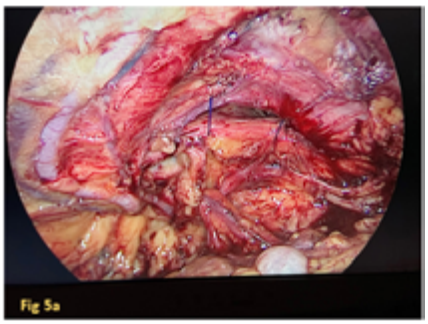


Figure 5a: Sutures are used to close the hernia defect, but the still image is limited in conveying the message.

Figure 5b: This short clip makes it clear how the sutures are used to close the defect.

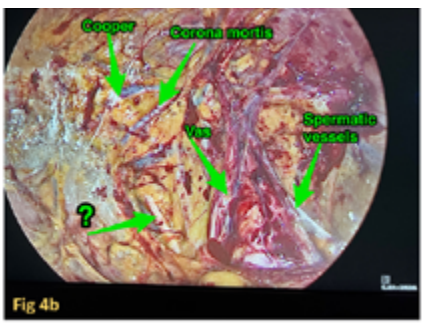


Figure 4b: After labeling and annotating surrounding structures there is a chance that your resident will solve the quiz.

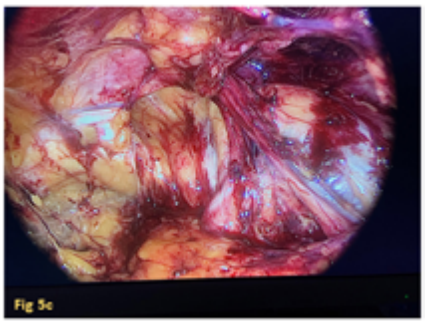


Figure 5c: The right-sided direct hernia is not easy to see in this still image. An annotation may help.

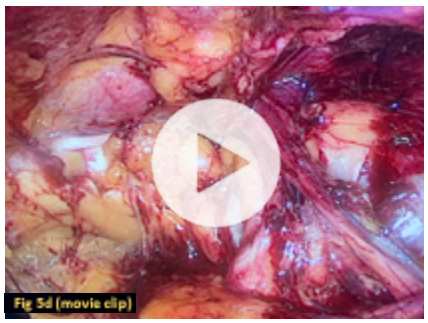


Figure 5d: A short clip will make the same hernia clearly visible.

D. Rosin

indecipherable to the viewer (Figure 4a). If you have a message to transfer, or a structure to emphasize - a few arrows and minimal text will have an enormous effect. Simple annotation tools are built-in Inside your mobile or available as simple apps. If you create a quiz for your residents about the obturator nerve- give them the hints they need: teach, don't intimidate. (Figure 4b).

4. **Let's move it.** Some processes are better understood as a moving image, rather than a still. A short clip will usually be enough, and "live photo" modality is perfect for that purpose. If not available on your mobile- a simple clip is good as well. If you use a live photo, remember that it is currently not viewable in most social media, so simply export it as a movie or a gif image. This is very easy to do. That way your viewer will understand that the two sutures in the defect (Figure 5a) are actually used to close it (Figure 5b), or that the direct hernia (Figure 5c) actually has a pseudo sac that can be inverted (and fixed) (Figure 5d).

These are a few of the many ways to perfect your images and avoid the cumbersome tasks involved in recording, transferring, editing, and selecting what you really need to demonstrate the anatomy, the technique, or your wonderful skills.

Danny Rosin is a Professor of Surgery in the Faculty of Medicine in Tel Aviv University, a reviewer and editorial board member of several medical journals, an associate editor of the World Journal of Surgery, and a co-author of several surgical textbooks.

Sort your surgery photos with Google

Ashvind Bawa

How do you store your photos? In a stack of hard drives, flash drives or in the cloud? Or are you clueless about where your photos are?
In the past two pandemic years, I have tried to sift through and scan my pile of hard drives to find a messy mixup of family photos, surgical photos and screenshots. It was time I moved to a cloud-based solution for my digital life. Google Photos came to my rescue and helped me organize my surgical life better.

Because of its flexibility, Google Photos can be used effectively on both IOS and Android platforms. Here are some of its benefits I discovered:

1. **Portability:** You can carry your library everywhere. Wherever there is internet you can access your photos by logging on to photos.google.com.

2. **Searchability:** Google search uses AI to organize photographs and videos and allows you to search a million photographs if you have them.

3. **Organization:** Google uses machine learning to find faces. It groups photographs together to discover pictures clicked throughout a person's lifetime. You can easily find pictures of your children, pets or yourself in surgical scrubs from many years back. It is a brilliant tool to surprise your family members with a lifetime of archived photographs. Surgeons can use Google photos to archive interesting cases and use the description setting to organize them based on topics such as inguinal hernias, ventrals, vacs, meshes or infections. It is a challenge otherwise to look for photographs when you need them quickly.

4. **Storability:** Google offers various storage options depending upon your need and data quantity. It may seem expensive to begin with. But one must realize that Google may be the only hard drive that you will ever need to store all your photographs safely and securely. Just keep your passwords safe, long and very difficult for anyone to trace. If you are internet aware, there is very little chance that your photographs would ever be accessible to anyone else. Also, the Google Photo App takes the load off your phone's physical storage as it uploads camera photos to the cloud and gives the option to clear your phone's storage.

So get set and enjoy the cloud and its silver lining.

Ashvind Bawa is an Associate Professor and Consultant Surgeon at Dayanand Medical College & Hospital, Ludhiana, India.

A. Bawa

Redefining successful outcomes

Charlotte Horne

Recurrence rates have traditionally been the metric of successful outcomes after incisional hernia repairs. While the transversus abdominis release (TAR) is widely considered as the surgical approach with the best outcome, data from a recently cited abstract authored by Zolin *et al* [1] from the team of Michael J. Rosen at Cleveland Clinic certainly calls into question this notion. A 27% composite recurrence rate, as noted in the abstract, should make every abdominal wall surgeon pause for breath.

Using the term recurrence as a measure of a successful outcome was popularized by Luijendijk *et al* [2] in 2000. Analyzing a suture versus mesh-based repair of incisional hernias, they demonstrated that using the mesh significantly reduced the rate of recurrence and therefore led to more successful outcomes. Two decades later abdominal core health surgeons now have a more in-depth understanding of abdominal wall function and a desire to improve a patient's quality of life after surgical intervention.

Poking our consciousness of outcomes, Poulose *et al* [3] demonstrated that both the number and the cost of ventral hernia repairs are rapidly increasing. They called for further research into what surgeons normally describe as routine operations.

While our knowledge of different procedures, utilization of minimally invasive techniques and the understanding of mesh properties has increased, so has our interest in improving outcomes after hernia repair. Only in recent times have we tried to understand our patients' perceptions of their repairs. Externally validated metrics such as the HerQLes score allow us to measure how hernia repair can alter one's quality of life. Additionally, decision regret analysis also allows us to understand what a successful repair for a patient is. If there is no recurrence found on imaging and yet the patient is unsatisfied with the outcome and would not make the same decision again, I am hard pressed to call that a truly successful outcome.

While the data from Rosen *et al*[1] certainly leaves one with questions, it also creates opportunities for further research into understanding what a truly successful outcome is. If there is a small recurrence on imaging, but the patient has improved quality of life and would undergo the same procedure again, would you consider this an unsuccessful outcome? Contrarily, if there is no imaging evidence of a recurrence, but the patient notices a bulge and has decreased quality of life, would you call it a successful outcome? While recurrence has seemingly been a black and white issue, we can now clearly see that it has shades of gray and may not be as straightforward a topic as we once thought.

B. Ramana

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Charlotte Horne is an Assistant Professor of Surgery at Penn State Health in Hershey, Pennsylvania. Her clinical and research interests include patient outcomes after abdominal wall reconstruction. When she isn't fixing massive hernias, she enjoys running, cooking and being a dog mom to her two Miniature Australian Shepherds.

Reset your regime

Aleks Salkin

According to a study published in 2013 in *The British Journal of Sports Medicine*, a whopping 4 out of 5 doctors surveyed didn't get enough exercise.

Americans fare worse. When it comes to advising your patients to lose weight and exercise before hernia surgery, bear in mind that patients are more likely to heed this advice from fit, not fat, doctors. Also, if you maintain a healthy body weight and healthy movement abilities, you may stay clear of ergonomic injuries from long surgeries.

Given that you are so busy, what is the minimalist way of training that may restore your mobility and help you get strong and resilient?

Simple – start with resets.

The resets – as taught by the international movement education group *Original Strength* – are five basic movement patterns found in what is known as the Human Developmental Sequence, namely: breathing, head control, rolling, rocking, and gait pattern movements such as crawling.

While they are the initial movements we do as babies, they also help bulletproof our adult bodies.

Here is a simple 5-minute routine that you can do from today.

A. Salkin

Breathe

Fun fact: you can only have a truly strong core if your diaphragm and pelvic floor work in unison. And one of the best ways to do this is with deep, diaphragmatic breathing. Breathing efficiency is the foundation of strength and athleticism.

Here's how to do it:

- Lay on your back, grab your shins just under your knees, and stay relaxed.
- Breathing in through your nose, inhale deep into your abdomen, imagining the air is filling up your back pockets, up into

your belly, through your rib cage, and finally into your chest. Do not simply fill your chest up with air.

- Breathe out slowly through your nose

Time: 1 minute

Head control

Function: Lights up the muscles of the core and back like a Hannukah Menorah. It also helps add resilience to your neck – a must for surgeons.

- Get on all fours and sit back toward your heels. Don't worry if your butt doesn't touch your heels, just go back as far as you can without pain or excessive discomfort.
- While maintaining your breathing (as above), look up toward the sky, then down toward your clavicle. Only go as far as comfort will allow.
- Look over each shoulder as though you're trying to look at your foot. Don't worry if you can't actually see it yet – this is more of an intention than a requirement.
- Pro tip: make sure your eyes lead the movement.

Time: 1 minute

Rolling

Rolling works your core musculature and helps gently mobilize the spine.

- Lay flat on your back and move your arms out of the way by putting them overhead to the best of your ability.
- Lift your head, look over to one side, and reach across your body with both your head and your opposite arm.
- Maintain your breathing. You may get the urge to hold your breath but resist that urge. Make sure you are still breathing with your diaphragm as above.
- Keep reaching until you find a sticking point, then relax and repeat on the other side.
- Ideally, you should be able to limply flop over onto your belly.

Time: 1 minute

Rocking

This works every muscle in your body, from your legs, hip, core, back, chest, arms, neck – you name it.

Not only does it leave no rock unturned, it also gently opens the hips, wrists, shoulders, spine, and more, all while restoring your posture – so you don't have to walk around the hospital like an extra from *The Walking Dead*.

- Get down on all fours as you did for the neck nods.
- While keeping your head up and maintaining your breathing, rock forward onto your hands and then backward toward your hips.
- Pro-tip: you don't have to get your butt all the way to your heels. Ideally, you only want to rock as far back as you can maintain the nice S-curve in your spine.

Time: 1 minute

Crawling

A. Salkin

If you want strength, mobility, stamina, resilience, athleticism and mental toughness from exercise, you need to crawl. Don't trust me on this, try it.

Here's how you do it:

- Get on all fours as before. Keep your head up and maintain your breathing.
- Take a step forward with your opposite arm and leg – this is the foundation of your gait pattern.
- Repeat on the other side, alternating smoothly between sides.
- If you're having trouble moving contralaterally, before you even take your first step, simply tap one hand to the opposite knee to get the rhythm down

Time: 1 minute

This routine will only take you about 5 minutes to do – longer if you choose. Plus, you don't have to go to a gym, breathing in other people's sweat and body odour. You can do this on your living room floor as you wait for your coffee to brew or in your office on your lunch break.

Already got a workout regimen? Great. Toss these moves in as your warm-up routine and you just might notice your all around fitness improve drastically.

And once you get into the groove of things and want to keep pumping up your strength, stamina, and head-to-toe resilience, you might enjoy my free book 9-Minute Kettlebell & Bodyweight Challenge.

Happy training!

Aleks "The Hebrew Hammer" Salkin is a level 2 StrongFirst certified kettlebell instructor (SFG II) and an Original Strength Instructor. He is currently based out of Omaha, Nebraska. www.alekssalkin.com.

Back to biology

A kestrel

Jose R. Castello

I believe that most doctors are somewhat fascinated by biology. What is Medicine if not biology specialized in a single species of primate, the human being? When I was a child, I wanted to be a biologist but was guided into medicine. I will never know if that was the right recommendation. Since then, I have wholeheartedly devoted myself to medicine and surgery. Well, most of the time.

I believe that most of us surgeons go through three stages in our careers: the first 15 years are invested heavily in training and learning; no rest, not much free time for much else than surgery, and being on call. It is an exciting period, but there is not much more than surgery (and that is how it must be to be a good surgeon).

The next 15 years are a period of stability. You keep working hard, you keep learning, but you also start teaching and traveling to attend meetings. You start to have some free time at the end of this period, but not much.

The last 15 years are a period of consolidation and enjoyment (or it should be). Time to lead a team, time to operate upon the most complex cases and recommended patients. But also time to start doing other things. Time to realize that there is life beyond surgery (in case it hasn't dawned upon you by then!). Time to realize that there is an exciting world beyond the hospital. I am now at the beginning of this stage. And I am truly enjoying it.

My passion for biology, the desire to travel, and two epic wildlife trips to Costa Rica and Kenya in 2016, definitively changed my way of seeing things. What better way to see things than to portray them with a camera? That is where my

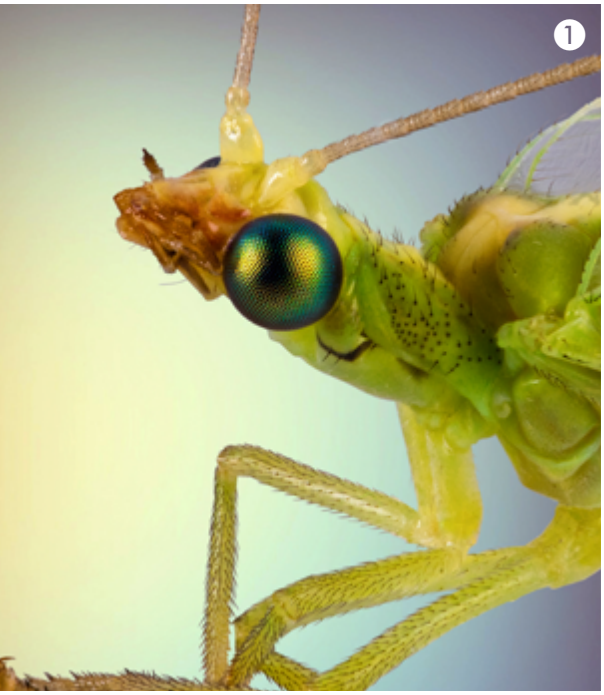
A seapen

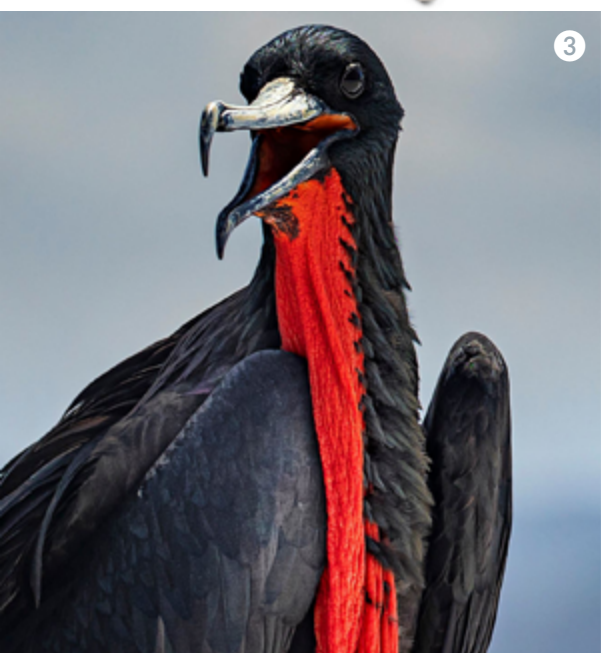
passion for wildlife photography took off. Since then, I have travelled and photographed species on every continent (except Oceania and Antarctica). I have photographed birds, mammals, reptiles, fish, and insects across many countries of South America, Central America, North America, Africa, Asia, Europe, and the Middle East. At the same time, I started scuba diving, with the sole objective of taking photographs underwater. Interestingly enough, there have always been great naturalists who were also physicians (e. g. Linnaeus, Livingstone, Von Siebold, Cook, Crevaux). The desire to know and explore is an innate characteristic of physicians. In all these years I have met many passionate doctors like me, who are also into wildlife photography.

In addition, wildlife photography serves as a way of disconnecting from our day-to-day work. The beauty of nature is a perfect counterpoint to the "ugliness" of disease and cancer. Being surrounded by nature is probably one of the best remedies to fight the burn-out syndrome, so frequent in our last years of career. In only a few places do I find greater spiritual peace and harmony than hiding among trees, waiting for hours for an eagle to appear, or underwater, taking photos of corals or sharks, where you can hear only your own breath.

Wildlife photography, like surgery, has many specialties, one for every personality. Macro photography for the perfectionist (as a microsurgeon I must admit that it is a discipline that fascinates me). Big fauna, for those who like speed and adrenaline. Bird photography, for those who take care of the details. Landscape photography for the most contemplative. And underwater photography, probably one of the most challenging. But as surgeons, we like challenges!

My love for wildlife photography and biology also led me to be interested in conservation. It also took me to know first-hand the fragility of the ecosystems that we have not yet destroyed, to live the effects of climate change. I have seen the deforestation of the jungles of Borneo, the garbage dumps in Central Africa from rich Europe. I have seen the ice melting in the Arctic Circle as well as the unstoppable desertification of North Africa. But this hobby has also allowed me to meet field biologists and conservationists who





Clockwise from top left: 1. A chrysopidae, 2. Beeaters, 3. A frigatebird, 4. Castello's zoology books

(Left) Castello in diving gear, (right) a manta ray

dedicate their entire lives to protecting a species in remote areas. After many years of being surrounded by medical colleagues, it is very enriching to get together with someone who does not always talk about surgeries! This interest led me to start writing my first book on fauna in 2016, which was published by Princeton University Press. To stop writing books on surgery and start writing about zoology was a refreshing change. Later, two more zoology books came out (and the fourth is on its way).

I continue to perform surgeries and work as hard as always, I now lead a team of excellent plastic surgeons, and I continue to teach microsurgery to foreign fellows and residents. But whenever I can, I make time to travel, to learn about zoology and conservation, to photograph wildlife, and to teach about photography and conservation. All of this allows me to go back to the hospital ready to continue working, and give my best to those patients who have been less fortunate than us.

Time is finite and life is short. And the world has amazing wonders, waiting to be discovered by those willing to enjoy and photograph them. For those of you who have yet to discover wildlife photography, I invite you to give it a try. You will not regret it. And maybe, just maybe, it will make you a better surgeon!

All photos courtesy Jose R. Castello

Jose R. Castello is a Clinical Professor, Head of Plastic Surgery Service, Hospital Universitario Puerta de Hierro, Madrid (Spain).

Ten reasons to enrol patients in registries

Chris Hensman & Alex Karatassas

The pursuit of science has changed radically from merely observing and testing a hypothesis to testing each and every aspect of knowledge under the microscope of large scale data or trials, where all other variables are (ideally) matched, or similar.

While randomised controlled trials (RCTs) are the gold standard for critical testing of hypotheses, there has been increasing focus on the utility of large, population-based registries. Hernia registries are not really new: the first one, pioneered by Eric Nilsson in 1992 led to the creation of the Swedish Groin Hernia Registry. In the next 30 years, hernia registries have come up in a handful of countries, with most hernia surgeries across the world conducted without accurate data tracking. Is it any wonder, therefore, that the bulk of current hernia practices are based on very low level evidence?

An ideal registry would be one that neither has funding issues nor unaddressed privacy concerns, with every case logged in and accessed from any site easily, giving the highest quality of follow up data to surgeon researchers.

The Herniamed registry is followed by 3 German-speaking countries – Germany, Austria and Switzerland, while the EuroHS is followed by the rest of Europe. The French and the Spanish have their own, but the Danish and the Swedish registries are the ones that carry the most leverage in terms of data value. The Americas Hernia Society Quality Collaborative (AHSQC) is an American resource that helps generate many papers but apparently suffers from less number of surgeons participating in it as compared to its European peers.

Outside Europe and the US, Asia is in the shade, while Australia and New Zealand are coming up with their own registry. The AWR Surgeons Community is also working on an Indian registry.

Why is it important to enrol patients in these registries? Here are our top ten reasons:

1. The collection and analysis of outcome data on hernia repair is the only method to improve the quality of hernia care. If you don't measure outcomes, you cannot improve.

2. Patient Related Outcome Measures and Patient Related Expectation Measures (PROMS & PREMS) are important for surgeons, to help them quantify what is important to their patients.

3. The information from local registries will help promote patient-centred care and allow tailoring the procedure for individual patients.

4. Moving from a volume-based health care system, to a value based one will require knowledge of defined outcomes. These can only be meaningfully collected within registry activity.

5. The heterogeneity of variables in hernia surgery results in many gaps in our knowledge. Optimising hernia care can only be successfully done through the analysis of big data provided by registries.

6. New techniques in hernia surgery are constantly being developed and require evaluation. In today's rapidly changing environment, randomised controlled studies are no longer applicable. We can only rely on data from clinical quality registries to guide treatment.

Chris Hensman

Alex Karatassas

7. Long term longitudinal follow up data, provided by registries, will be the only robust way to determine the incidence of hernia recurrence (as many recurrences can occur after 10 years or more).

8. Data from registries will be the only way to determine the optimum mesh for an individual patient in a given clinical situation.

9. There is a huge variance in hernia management even for common uncomplicated hernias and this requires evaluation and management, only possible within a registry activity.

10. Standardised Registry data is the only way to compare techniques and outcomes.

Chris Hensman is a Melbourne-based surgeon focused on learning healthcare systems, among other things. Alex Karatassas is a hernia surgeon at the Queen Elizabeth Hospital and teaches at the University of Adelaide.

Mentors are key to your success

Charu Paranjape

Divyansh Agarwal

One of the joys of being in Boston is to be in the vicinity of multiple high-impact academic medical centers such as the Massachusetts General Hospital (MGH), one that has been consistently ranked as the number one surgical residency in the US for many years. Charu Paranjape speaks to Divyansh Agarwal, a surgeon-scientist trained at MGH, about his journey from schooling in Meerut, India to surgical residency in Boston. He tells us how having the right mentors has helped him achieve his goals and emphasizes the need for more physician scientists in India to strengthen medical research.

(Divyansh Agarwal graduated Phi Beta Kappa from Yale College in 2015, earning both a B.Sc. and an M.Sc. A recipient of the Yale University's Edgar J. Boell and William R. Belknap Prizes, he also got the 2015 Thomas J. Bardos Science Education Award by the American Association for Cancer Research as well as the 2014 Michael Manzella Foundation Research Fellowship. His M.D. and Ph.D. degrees are from the University of Pennsylvania, where he was the inaugural Blavatnik Family Foundation Research Fellow, and was inducted into the Alpha Omega Alpha. He is currently a research affiliate at the Massachusetts Institute of Technology (MIT), a clinical fellow in surgery, and a surgical resident at MGH, Harvard Medical School.)

Charu Paranjape: What was your trajectory like, coming to the US after completing high school in India?
Divyansh Agarwal : After finishing 12th grade in India, I pursued science and medicine throughout my undergraduate and graduate education. I would have never been where I am today without a supportive family, teachers, and mentors. In fact, I cannot emphasize enough the importance of mentorship. Find people who you can relate to and are kind, see in you what you might not, and strive to make you a better person. Such mentors are not always easy to meet in life, but when you do find them, they change your lives forever. The success I have made thus far is only because of those educators who were invested in my excellence and well-being. From my teachers in India, in college and graduate school, and now the department of surgery at MGH.

CP: How different is surgical residency in the US compared to that in India?
DA: One of the main differences between residency training in the US and in India is the emphasis on research, especially at academic medical centers and universities. I think the focus here is to train surgeons who are at the forefront of treating as well as understanding the disease. For instance, at MGH my surgical mentors are not only active clinically, but also researching the biology of the disease and the outcomes of newer treatments. There is a paucity of surgeon-scientist training programs in India, but that may be an opportunity for growth.

CP: What upcoming technologies are being pioneered at MGH to make surgical education better for the residents? Are you involved in any such initiative?
DA: One of the biggest challenges I've found in medical education and residency training is to be able to get tangible and meaningful feedback that can help improve one's surgical skill set. We are using a platform called *MediMentor* to address this challenge. Briefly, *MediMentor* allows you to upload a video recording of you performing a surgery or procedure. The video can then be shared with surgical mentors, who can annotate it offline or in real time to provide direct audio-visual feedback on various aspects of an operation such as tissue handling, dissection technique, suturing and knot tying, and laparoscopic skills, to name a few. While we envision this software to be transformative for undergraduate and graduate medical education, I also foresee this being a powerful tool that can help coach surgeons and transfer experiential knowledge and wisdom between the experienced and early career surgeons across the world.

Charu Paranjape is Assistant Professor, Harvard Medical School; Associate Chair of Education, NWH; Chief of General Surgery and Acute Care Surgery, NWH; Surgical Director, NWH Heartburn and Reflux Program; and Trauma, Acute Care and Critical care Surgeon at Massachusetts General Hospital.

Heard and seen

Eham Arora

In this column, I'll list some recent interesting events relevant to AWR and hernia surgeons. You can catch up if you missed out on them the first time.

- We routinely divide one of the three flank muscles in component separations, but have you wondered just how many muscles does the abdominal wall actually need to stay 'intact'? Modern practices shun any surgery where more than one form of component separation is performed, but what about end-stage hernias? Does a 'double' component separation make sense? Listen to this talk by Dr. Javier López Monclús, delivered at the 'Loss of Domain 2021' Conference and titled 'Double Component Separation - Eating Forbidden Fruit?'. Youtube link
- The inaugural ANZAWR event saw some heavy-hitters from across the globe. Choosing one highlight proved too difficult, so here are three! Ajita Prabhu, Bruce Ramshaw and Benjamin Poulose discuss what data means to us and how it can be used, whether we have the right systems in place to provide the best hernia care and why abdominal core health should be at the core of your hernia practice. Youtube link
- Few professors of surgery have an influence as wide and lasting as Tehemton Erach Udwadia. He has moulded surgeons over three decades at Mumbai's Grant Medical College, pioneered minimal access surgery in the Indian subcontinent and founded a surgical society to disseminate skills and improve the adoption of new procedures among members. Udwadia's just-published memoir "More Than Just Surgery" details his journey as a medical student, researcher, resident and teacher. It is a warm account of the hardships, absurdities and successes of a remarkable life against the backdrop of surgery. It has lessons not just on the philosophy of surgery, but what is needed to live a good life. The book is a must-read for those who wish to know more about the man and what drove him.

Eham Arora is an Assistant Professor in the Dept of General Surgery, Grant Medical College and Sir JJ Group of Hospitals, Mumbai. He likes to teach and travel and is a sucker for dad jokes.

Learning in Spain

Vishakha Kalikar

I travelled to Spain in June 2019 as a part of the training program offered by the AWR Surgeons' Community in India. I had applied without any expectation of getting in as I wasn't aware of the selection criteria. But true to their word of giving young surgeons opportunities as and when possible, I was given a wonderful opportunity to visit Madrid to train under some of the biggest names in hernia surgery there – Luis Hernando Blasquez, Javier Lopez-Monclus and Miguel Garcia-Ureña.

The program was scheduled for a week across 3 different hospitals in Madrid. A schedule was sent to me a few weeks before I left from India and the AWRSC team saw to it that everything was in order for the program.

Some things struck me. The people were so warm and welcoming in Madrid, the doctors at all the three hospitals made us feel at home. They were methodical to the T, lay much emphasis on research and churn out papers on multiple topics. They conversed in English, so communication was never a problem. On the last day, we participated in a cadaver course, a highlight of the program. We learnt that even the biggest of hernias can be tackled with the smallest of the incisions. To top it all, Spanish food was lip smacking.

The lightbulb moment of the trip was getting to observe a technique called 'Reverse TAR' done for lateral or flank hernias. A complete pre peritoneal dissection was carried out by making an incision over the previous flank incision itself. The transversus abdominis plane was entered first and then as we approached the midline, the retrorectus space was entered medial to the linea semilunaris, followed by placement of the mesh and closure.

This procedure isn't common, and it was an eye opener for me. We have to keep learning and the AWR Surgeons' Community is doing its bit by constantly conducting workshops and CMEs.

The trip was one of a kind, to say the least. I could explore a new country. It broadened my horizons. I also learnt a lot of new things related to abdominal wall reconstruction. But most importantly it taught me to think outside the box, and overcome my fears. I now know that only when we get past our monsters are we able to push ourselves to unthinkable limits.

Vishakha Kalikar is a Consultant Surgeon, Zen Multispeciality Hospital, Mumbai, India.

EHS Manchester

Aali Sheen

With the global pandemic situation swinging like a pendulum on amphetamines, it would be reasonable to scientifically hope that widespread vaccination may lead to less restrictions around the globe.

With that hope, the European Hernia Society program for 2022 to be held in Manchester, UK (18-21 October), has been carefully designed to not only cater to experienced hernia surgeons, but also young and upcoming trainee surgeons. It will also bring in the perspective of patients and other health professionals such as physiotherapists.

The organizing team comprises surgeons from Manchester and a very strong ensemble, mainly from the British Hernia Society (BHS) board, who are putting together an excellent academic program.

This meeting will concentrate on debates on controversial topics such as mesh versus non mesh surgery for the groin, the types of mesh being used and whether one has advantages over another. There will be multidisciplinary team meetings designed to discuss complex patients with groin disruption, chronic postoperative inguinal pain and large incisional hernias with an abdominal wall MDT. To top it all off, a courtroom drama with real-life lawyers and a judge discussing the medico legal implications of a case will provide great educational value. It goes without saying that the program has also incorporated a breadth of keynote speakers from across Europe and wider afield aiming to provide a global perspective on hernia surgery.

Both my organising team and I encourage all trainees and hernia specialists around the world to submit their abstracts as we are hoping to have an unprecedented number of oral presentations. There will be a new design with short oral talks of three minutes comprising six slides with two minutes for questions. I feel this is the preferred way for more trainees/ academics to present their work in a coherent manner and face questions from a learned audience. We trust this will make for a higher attendance, especially with a planned reduction in registration fees for trainees.

For this Congress, we have also engaged with our patient representatives on the BHS board who are putting together a session to deal with the most common questions that patients ask about hernia surgery. We hope that all the sessions will be interactive using a specially designed app, and that it will allow surgeons from overseas to join.

You can follow the conference here, including details about registration, abstract submission, accommodation and the social program with insights into the great northern powerhouse, the city of Manchester.

Let's hope humanity finds a happier medium to interact in 2022.

Aali Sheen is a hernia surgeon based in Manchester, UK and is President of the British Hernia Society.

Test your gaps

1. The COBRA study tested which mesh?

a. Mosquito net
b. P4HB
c. Bio-A
d. Surgisis

2. Regarding desmoid tumours, the following are all correct, except:

a. They are strongly associated with genetic changes
b. They may be associated with adenomatous colonic polyps
c. They are typically classified as intermediate in behaviour between benign and malignant
d. Resections with positive margins need re-excision as the tumor is locally invasive

3. Which mesh has the following composition? "*40% of the matrix by weight, is a copolymer of glycolide, lactide, and trimethylene carbonate. The slow-resorbing fiber, making up approximately 60% of the matrix by weight, is a copolymer of lactide, and trimethylene carbonate.*"

a. Bio-A
b. Avicel
c. TIGR
d. Ovitex

4. Biologic or synthetic meshes have been utilized in which of the following organs/body parts?

a. Brain
b. Liver
c. Breast
d. Neck

5. In ancient times, the procedure, through which strangulated hernias were reduced by surgically dividing the constricting ring, was known as:

a. Celiotomy
b. Laparotomy
c. Kelotomy
d. Herniotomy

ANSWERS

1. c. The COBRA study compared the results of procedures using synthetic mesh versus a biologic product in the setting of contaminated hernias. [Rosen MJ, Bauer JJ, Harmaty M, *et al*. Multicenter, Prospective, Longitudinal Study of the Recurrence, Surgical Site Infection, and Quality of Life After Contaminated Ventral Hernia Repair Using Biosynthetic Absorbable Mesh: The COBRA Study. Ann Surg. 2017;265(1):205-211. doi:10.1097/SLA.0000000000001601]

2. d. Desmoids, though usually sporadic, are associated with germline mutations of the APC gene, and occur in patients with Gardner syndrome or familial adenomatous polyposis. These conditions are associated with adenomas. While the tumour is locally invasive and aggressive, it may resolve spontaneously or with immunomodulatory agents. Resection with positive margins does not mandate reoperation.

3. c. TIGR mesh is a mesh that is variably absorbable in relation to time. "The fast-resorbing fiber, making up approximately 40% of the matrix by weight, is a copolymer of glycolide, lactide, and trimethylene carbonate. The slow-resorbing fiber, making up approximately 60% of the matrix by weight, is a copolymer of lactide, and trimethylene carbonate." (From company website.)

4. c. Two-stage as well as single-stage breast reconstructions with the use of biological meshes have been done in several centers, and the outcomes studied. Absorbable and synthetic meshes have also been used.

5. c. The old term kelotomy refers to releasing the constriction of a strangulating hernia ring, and is still used in veterinary surgery.

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