

VENTRAL & INCISIONAL HERNIAS

AND

REDO, COMPLICATED, & FAILED HERNIA REPAIRS

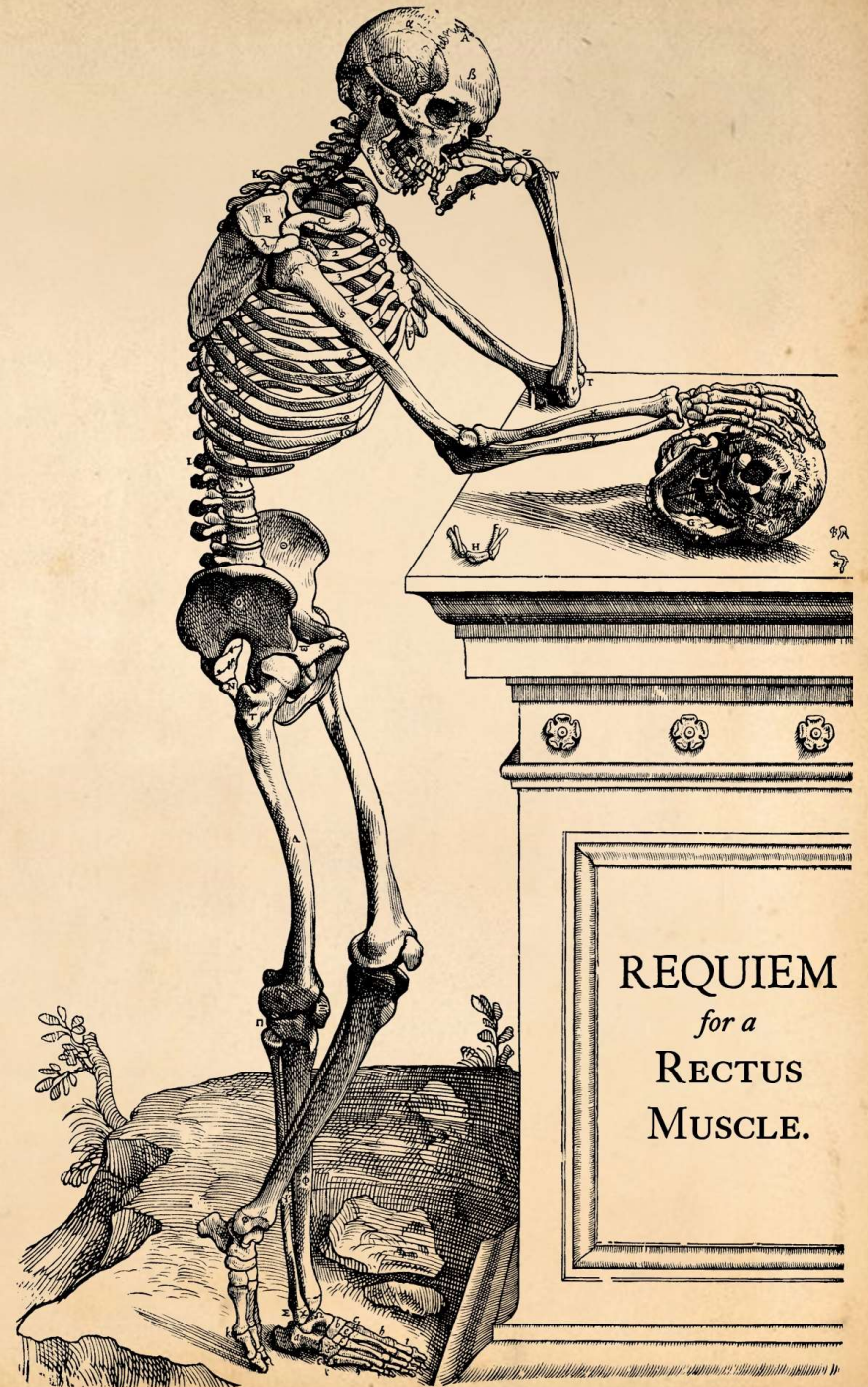
HOW DID WE GET INTO SUCH A MESS?

KEY IDEAS IN SURGICAL
THEORY & TECHNIQUE

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2021





HERNIAS & COMPLICATIONS

THE NATURAL DISEASE VERSUS THE UNNATURAL DISEASE

Nature of the Problem

Biology of hernia
Surgical education
Inadequate technique
Companies and products

*Confusion of hernia as acute bowel complications,
versus hernia as abdominal wall reconstruction.*

*Failure to repair abdominal wall and
thereby prevent hernias.*

Inadequate and incomplete repairs.

Morbid complications of products.

Incidence of failures and redo surgery.

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HERNIAS & SURGERY

HISTORICAL PERSPECTIVES

How surgeons have perceived hernias,
in the modern surgical era.

*Hernias have always been part of
the surgical arts, sciences, and curriculum.*

*They have garnered attention more for their acute
complications than as a problem to be fixed.*

*Hernia fixes have variably been perceived as
difficult and prone to recurrence.*

*Until the latter 20th century,
Inguinal hernias always received the most attention,
followed by other natural developmental hernias,
followed least by ventral and incisional hernias.
That balance has changed over past 30 years.*

CHAPTER V.

Treatment of Irreducible Hernia.

Irreducible hernia must in great measure be left to themselves. The inconveniences arising from the bulk are considerable, and there is constant danger of strangulation. This risk is diminished in many cases by the great dilatation of the ring, but it nevertheless exists, and should render the patient extremely cautious of all violent exertions, and he should especially guard against costiveness.

Cases considered as irreducible hernia have in some instances been gradually returned into the abdomen in consequence of long confinement to bed, and frequent purges, together with an adherence to an abstemious diet.

Elements of Surgery: For the Use of Students

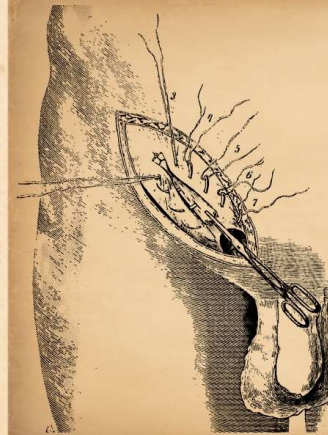
John Syng Dorsey, M.D. (1783-1818)

Professor of Surgery, University of Pennsylvania

America's first textbook of surgery.

1813

Book has 100 pages on comprehensive hernia management, including surgery. However, surgery was for select conditions, usually urgent, focus on hernia reduction and sac ligation, not at all on abdominal wall repair.



83. The Radical Operation for Umbilical Hernia. This operation, and that for strangulated umbilical hernia, are performed by making a transverse incision through the skin and subcutaneous tissue,

..... cut away the thickened neck of the sac and to introduce deep sutures simultaneously through the aponeurosis (linea alba) and peritoneum (neck of the sac). It is best to use interrupted sutures at intervals of not more than 1 cm., and to apply them in such a way that the umbilical opening is firmly closed in a transverse direction.

Text-Book of Operative Surgery

Dr. Theodor Kocher, M.D. (1841-1917) Professor of Surgery, University of Bern
Epitome of first generation surgery after advent of anesthesia & asepsis.

1895

Limited hernia text, groin & umbilical, nothing on incisional hernia. Technical discussions about reducing and managing sac. Marginal text on repairing fascias or abdominal wall.

Treatment.—In certain cases considerable relief may be obtained by a properly fitted abdominal support. Curative treatment is by operation if the general condition of the patient permits. The operative procedure follows that described for umbilical hernia. The old scar is excised, the contents of the sac are reduced, and the repair of the defect is carried out by overlapping the edges. When this is not feasible, some form of patch to fill in the defect may be used. Skin, fascia, tantalum, and stainless steel mesh have been recommended.

Textbook of Surgery:

H. F. Moseley, D.M., M.Ch.

Professor of Surgery, McGill University

Era of mature abdominal surgery before laparoscopy.

1952

Thorough hernia chapter, mostly inguinal and femoral, then others. Ventral hernia all forms get 2 full pages (sm.4to, 7"x10"), of which ¼ (1 column) is "Incisional or Postoperative Hernia" (shown). "Overlap" is a virtue often ignored now. By then, incisional hernias were common enough to provoke ideas about irreducible defects.

Incidence, Ventral and Incisional Hernias

(ESTIMATES FROM MULTIPLE SOURCES)

Laparotomies / year, USA	2,000,000 – 3,000,000 – 4,000,000
Ventral hernia operations / year, USA	150,000 – 300,000 – 500,000 <i>Includes natural & incisional hernias.</i>
Hernia incidence % of laparotomies, 1°	5 % – 10-20 % – 35 % <i>Estimates have increased with time.</i>
Recurrence % after primary repair, 2°	5 % – 10-20 % – 35 % <i>Variable, depending on technique.</i>
Recurrence % after secondary repair, 3°	20 % – 35 % – 65 %

Hernia incidence rates reported from other countries are generally comparable.

Progressive Poor Results for Incisional Hernias

📊 2011: “794 patients: 61% primary VHR, 26% IHR-1 [1st incisional hernia repair], 9% IHR-2, 4% IHR-3. Patients with multiple repairs were more likely to undergo reoperation, have longer operative duration, develop infection, and recur. At 140 months, 37% of primary ventral hernias and 64% of incisional hernias have recurred. Highest recurrence rates 73% are in IHR3. Previous VHR creates a vicious cycle of repair, complications, reoperation, re-repair.”

📊 2015: “250,000 ventral hernia repairs each year in the U.S., recurrence rates high: 54% after primary repair, 25% after synthetic mesh repair, and 22% after components separation.”

📊 2000-2011: “Recurrent hernia following incisional hernia ranges from 18 to 50 percent.”

Various studies estimate, and decry, economic and social impact.

The problem is confused and compounded by inconsistent techniques, and variety of manufactured “meshes” and other products, many of questionable nature.

Alloplastic meshes can provide structural stability, but many reports document increased complications rates that offset any anatomical gains.

Changing Incidence & Mix of Hernia Types

(ESTIMATES FROM MULTIPLE SOURCES)

📊 2011 (USA)

“RESULTS: The number of inpatient VHRs [ventral hernia repairs] increased from 126,548 in 2001 to 154,278 in 2006. Including 193,543 outpatient operations, an estimated 348,000 VHRs were performed for 2006. Inpatient costs consistently rose.

“CONCLUSIONS: VHRs continue to rise in incidence and cost. By reducing recurrence rate alone, a cost saving of US \$32 million dollars for each 1% reduction in operations would result.”

📊 2011 (England)

“2389 patients, 2510 hernia repairs during three periods: 1985–1988; 1995–1998; 2005–2008. Inguinal hernia repair was universally commonest. Femoral hernia repair was second commonest in the 1980s, the fifth most common by 2005–2008. Proportion of groin hernia repairs has decreased over time; proportion of midline abdominal wall hernias has increased. ... The relative frequency of groin hernia repair has decreased over time, frequency of midline abdominal wall hernia repair has increased. Relative frequency is: inguinal, midline, femoral. This contrasts with figures quoted in common reference books over the last 30 years.”

📊 2013 (India)

“Inguinal hernias, 77.81% of cases. Ventral hernias were 18% of cases. Femoral hernias were rare ... which obviously differs from literature mentioning frequency as: inguinal, femoral, umbilical and others. Incidence of femoral hernia is very low as compared to literature where it comes as third commonest type of hernia. Incisional hernia was approximately 3% which is significantly lower than USA and UK where it is 6% - 10%, but in accordance with African literature (underreporting as our population is less disease conscious?).”

Analysis & Summary

Hernia incidence and mix is traditional surgical knowledge

found in surgical journals, textbooks, and curricula of the 20th century.

Historically, most hernias are natural, inguinal hernias about 75%,

femoral hernias the traditional second.

Experienced surgeons perceive, and recent papers confirm, beginning c 1990,

an increase in ventral hernias, mostly post-operative incisional hernias.

Modern hernia rates exceed historical controls by as much as 6-8 fold,

a morbid and expensive problem that rises to status of epidemic.

The zeal to address the problem may be making it worse,

many patients crippled by repetitive failed repairs and complications.

The zeal to fix the problem has resulted in products that make more trouble,

typically alloplastic materials made of non-biological materials.



1990 - The turning point - Laparoscopy

The public health epidemic of increasing morbidity, expense, and failed results of hernia care and surgery has its origins in the advent of laparoscopy.

General implications of laparoscopy.

A proven innovation making intra-cavitary surgery safer and more effective for diverse problems.

Hernia related implications of laparoscopy.

*The good **: laparoscopy results may exceed open repair for select problems.*

The ugly: laparoscopy cannot effectively expose and fix certain problems.

The bad: "Use it or lose it", surgeons have forgotten how to REPAIR the abdomen.

*The corollary: Proprietary products to the rescue, rather than surgical education.
(Some products greatly enhance hernia repair, some make it criminally worse.)*



THE TRUE NATURE OF HERNIA

A DUALITY OF PERCEPTION

Effective hernia care depends on an appreciation of why surgery is being done under the specific circumstances.

Acute vs Chronic

Illness vs Reconstruction

General Surgery vs Plastic Surgery

1 General Surgery

Incarceration, Obstruction, Infarction, Peritonitis, Acute complications, Life and death, Critical illness, Expedient closure.

Plastic Surgery

Reconstruction, Wounds and defects, Anatomical restoration, Chronic and considered, Functional restoration, ADL's, Balance and strength.

2

Analogy to amputations

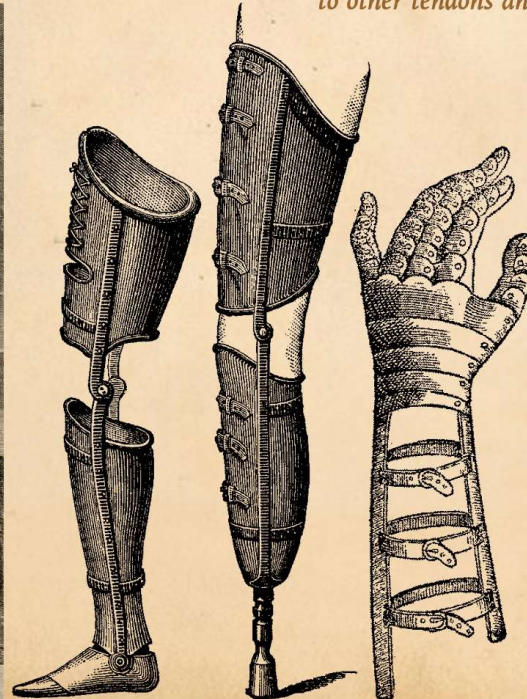
Curative procedure to separate disease from patient, versus reconstructive procedure to hold a prosthesis.

3

Musculoskeletal reconstruction

Hernia is not inherently “abdominal”.

It is a myofascial repair comparable to other tendons and ligaments.



Bad engineering

“Kugel Hernia Repair is gaining momentum around the world as the next step in hernia repair when comparing laparoscopic versus open procedures. The benefits to the patient, surgeon, and hospital make this procedure a winning combination.” **Bard Promotion**



Kugel Mesh Patch: 'A Terrible Ordeal'
 “In 2003, when Janine Ryan's (not her real name pending a lawsuit) mother, Sophia, had a Kugel Mesh hernia patch implanted, neither knew that there were any possible risks associated with the patch. But Sophia's patch broke, causing her to experience severe pain and other serious problems.” **Lawyer Site**

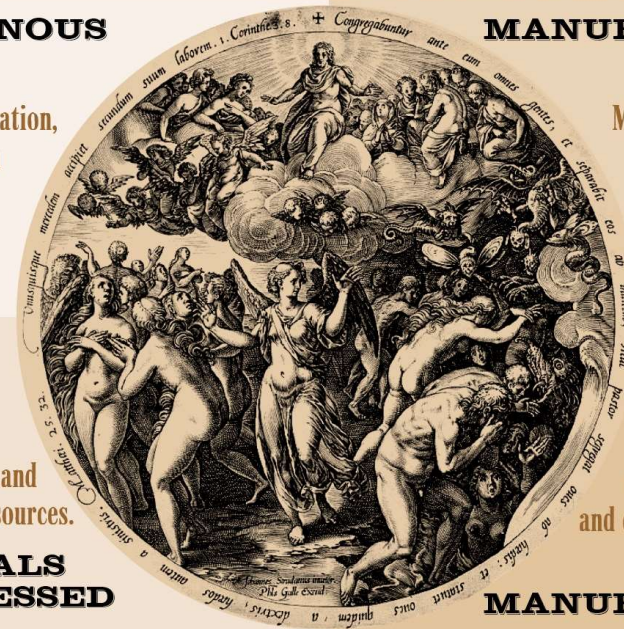
INDUSTRY & MANUFACTURED PRODUCTS IN SUPPORT OF HERNIA CARE & SURGERY

AUTOGENOUS REPAIR

Reduction, restoration, or reconstruction of the native anatomy.

Regenerative matrices made of cadaveric dermis and other biological sources.

MATERIALS REPROCESSED



MANUFACTURED DEVICES

Made with resorbable artificial, chemical non-biological materials.

Made with non-resorbable artificial, alloplastic and composite materials.

DEVICES MANUFACTURED

Parietex™ Composite Ventral Patch

Symbotex™ Composite Mesh
 For Ventral Hernia Repair

3DMax™ Mesh

COMPOSIX™ L/P Mesh

KUGEL™ Hernia Patch

PERFix™ Plug

VENTRALEX™ ST Hernia Patch
 Featuring Sepra™ Technology

C-Qur | MESH
 O3FA FILM COATED MESH

GORE DUAL MESH™
 BIOMATERIAL

PROCEED™ PVPM 2 Pieces
 VENTRAL PATCH 6.4 cm x 6.4 cm (2.5 in x 2.5 in)

ETHICON PHYSIOMESH™

PROLENE* Mesh
 Polypropylene
 Nonabsorbable Synthetic Surgical Mesh

Complicated devices I have removed:

COMPOSIX	BARD
C-QUR	ATRIUM
GORETEX	GORE
KUGEL	BARD
PROCEED	ETHICON
SYMBOTEX	MEDTRONIC
&& MANY OTHERS UNKNOWN	

Products withdrawn, recalled, or in class action and extensive personal injury litigation:

PARIETEX	COVIDIEN
C-QUR	ATRIUM
PHYSIOMESH	ETHICON
PROCEED	ETHICON
PROLENE HS	ETHICON
KUGEL	BARD
3DMax	BARD
PERFix	BARD
VENTRALEX	BARD

INTEGRATING NEW PRODUCTS AND TECHNOLOGIES INTO PRACTICE

Medical arts and sciences evolve, and all practitioners will, in the course of their careers, be expected to understand the advances that support better care of the patient — new medical knowledge and concepts, but also new products and their usage.



WRITING HOME ON AN ADJUSTABLE TABLE.

*“Hospital Life in New York”,
Harper’s Monthly v57, July 1878*

Concerning Hernia Products

Proper techniques of autogenous repair are essential.

Manufactured products to augment or reinforce autogenous repair are essential in select (many) cases.

Mounting evidence confirms the value of proper hernia products.

Biomatrices are not subject to the same problems and complications as alloplastic artificial materials.

There is both wheat and chaff among endless new products. Despite nominal engineering standards and government oversight, some products will give your patients the tummy ache from hell. Others will be genuinely nutritious tasty grains that will fundamentally change methods and results. Practitioners must discriminate between them.

INTEGRATING NEW PRODUCTS AND TECHNOLOGIES INTO PRACTICE



HERNIA & THE MODERN SURGEON

VENTRAL AND INCISIONAL HERNIAS,
including the perverse subtype of the iatrogenic multiply recurrent hernia, and those complicated by morbid, disabling, & lethal complications, complicated yet more by poor products, have reached epidemic proportions during the past **30** years.

Hernia Repair & Reconstruction

done effectively and safely, must acknowledge the nature of the problem as a musculoskeletal procedure and apply relevant techniques. This can, often must, include manufactured products, but the choice of proper materials is essential and is the responsibility of the surgeon.

The Pathway to Safe and Effective Repair

is revealed in the biology of hernia, and the principles of classical hernia surgery, and the newer principles of care, the good and the bad, revealed over the past 30 years: Proper handling of the native autogenous tissues, the choice and use of reinforcing materials, and the avoidance of non-biological materials lead to proper results.



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VENTRAL AND INCISIONAL HERNIAS
PHYSICS, PHYSIOLOGY, & TECHNICALITIES



HERNIAS & ABDOMINAL WALL DEFECTS

CRUCIAL SCIENCE, ART, & TECHNICALITIES

These details make the difference between a one-time assured successful restoration or reconstruction, versus a failed procedure that further damages the abdominal wall and makes it harder for the next surgeon to succeed.

Would these surgeons accept a 20-60% rate of -

Cardiothoracic : leak (bleeding or regurg) after valve replacement?

Orthopedics : infection or subluxation after total hip replacement?

Neurosurgery : paraplegia after elective spine decompression?

General Surgery : stump leak after appendectomy?

Then why do you accept a 20-60% rate of hernia after laparotomy – or worse yet – after hernia surgery which was meant to fix the problem, especially when your forebears of a generation or two ago could do it with minimum failure rate?

NATURE OF THE SITUATION

Surgical Context is Essential

Acute abdomen or emergency surgery.

Abdomen must be left open.

Essential need to avoid evisceration.

- versus -

Acute abdomen or emergency surgery.

Abdomen must be left open – BUT

Bowel block is stable, no risk of evisceration.

- versus -

Elective or less severe abdominal surgery.

Proper repair of incision is possible.

- versus -

Later reconstruction in absence of acuity or

concerns about anything other than

the abdominal wall per se.

Discriminate between repair of an incision

- versus -

Reconstruction of missing wall (less frequent).

Hernia repair and abdominal wall restoration are a musculoskeletal reconstruction.

Principles of repairing tendons and fascias apply, not principles of bowel surgery.

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Like everything in medicine, good results derive from knowledge of the underlying biology.

For abdominal wall restoration, the relevant physiology is founded in biomechanics, the biology of scar, and the applied science / structural engineering of musculoskeletal reconstruction.

BIOLOGY & PHYSICS OF HERNIA

Understand the plasticity of the abdominal wall.

Plasticity is the time-dependent behavior of a material under mechanical load, stress or strain.

Distinguish abdominal wall defect versus hernia.

Understand why a hernia per se starts to develop about 6 months after prior surgery or trauma, and why this crucially influences timing of the repair.

Plane of the abdomen - & - Pseudo-fascia,

- versus -

Process (hernia sac) - & - Prolapse.

The difference is just a matter of time, but it is a crucial difference in surgery planning & results.

Afferent phase plasticity.

Scar maturation-relaxation, aneurysmal dilation, time of true hernia onset, time of progression, wait time until repair-reconstruction.

Intra-operative & efferent phase plasticity.

Tissue relaxation times during surgical repair.

Structural repair.

Stress concentration, load sharing, fixation points, coaptation-binding areas, neurovascular protection.

Abdominal wall, msk, wound healing mechanics.

Why intercalated and edge-to-edge repairs cannot work, especially with alloplastic meshes.

Control the Four Horsemen

Edema, Deadspace, Motion, Inflammation.

HERNIAS & ABDOMINAL WALL DEFECTS

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Why do you accept a 20-60% rate of hernia after laparotomy – or worse yet – after hernia surgery which was meant to fix the problem, especially when your forebears of a generation or two ago could do it with minimum failure rate?

*The more you do unnecessarily or at the wrong time or with the wrong methods and materials, the less likely to get a good result,
AND
the **More Damage** you do making a later proper repair all the harder.*

STRATEGIES OF REPAIR 1

Acute surgery for hernia complications, simple.
After reducing bowel and alleviating incarceration and obstruction, if the abdominal wall can be properly and permanently repaired, do so.

Acute surgery for hernia complications, morbid.
*Do the minimum to get in and out.
DO NOT damage the abdominal wall by pointless reconstructive escapades that will fail.*

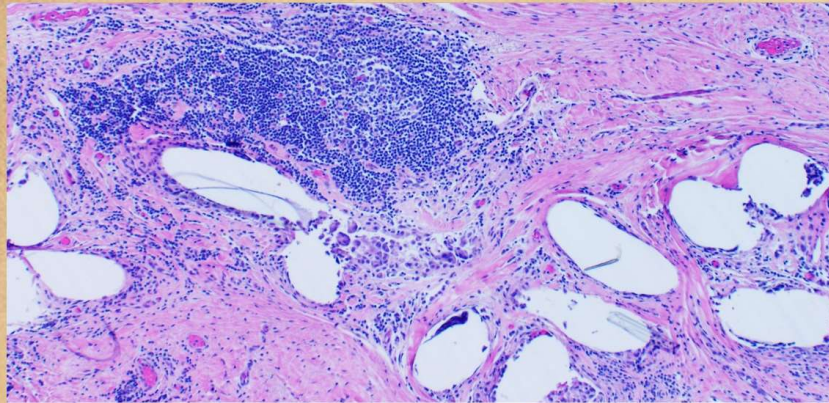
... If a virgin abdomen with free bowel ...
*Do what is required to prevent evisceration.
But, DO NOT use alloplastic meshes.
Use safe biomatrices.*

... If bowel is already frozen or cemented ...
It does not risk evisceration, so do not damage the abdominal wall by "repair" or matrices.

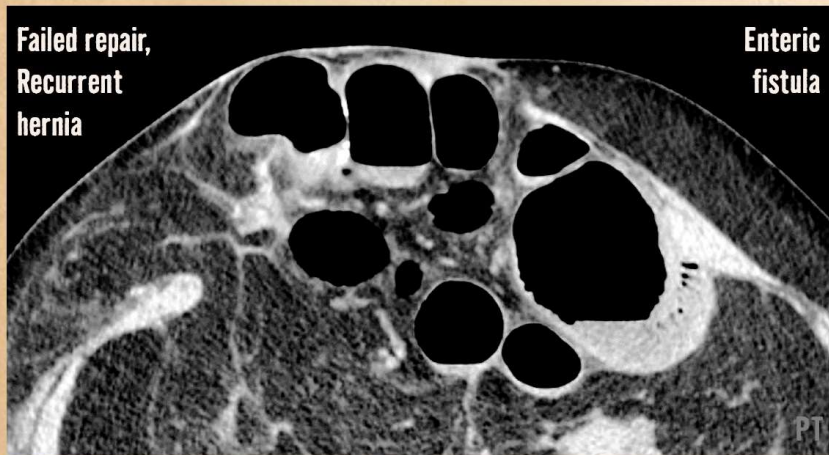
... Either way ...
*When wound is clean, just close skin over the defect.
Get it healed, then wait for the correct time to do a proper effective abdominal wall restoration.*

DO NOTHING THAT DAMAGES.

*Do nothing that damages the native abdominal wall.
Do nothing to risk visceral injury or perforation.
Do nothing to compromise future repair.*

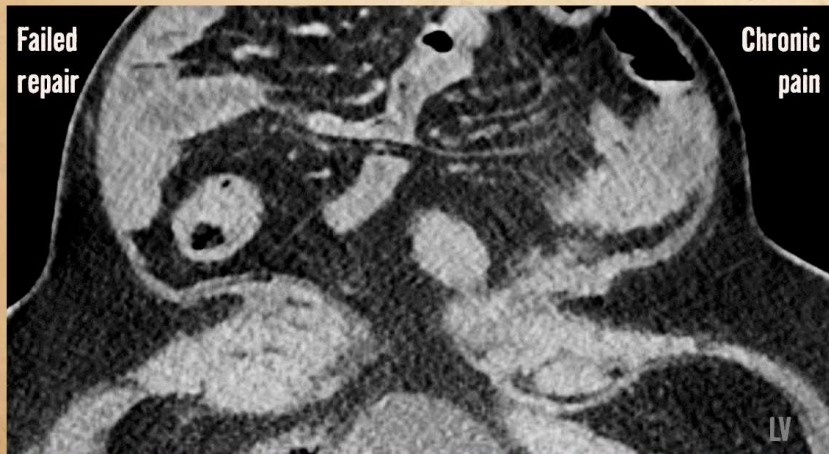


Chronic inflammation, pain, drainage, ulcers, adhesions, fistulas



Failed repair,
Recurrent
hernia

Enteric
fistula



Failed
repair

Chronic
pain

The more you do unnecessarily, at wrong time, with wrong methods and materials, the less likely a good result,

AND

the More Damage done, making future proper repair much harder.

STRATEGIES OF REPAIR 2

Repair native anatomy that can be reduced & coapted.
That is most hernias.

If native anatomy is present but “too tight”.
Staged reconstruction, based on principle of “serial reduction” or “serial advancement” and the bio-plasticity of fascias and tendons.

Avoid “component separation” or other damage.
Do nothing to further damage the abdominal wall . It can indeed source flaps for problem defects, but that should be for highly selective exceptions.

— ◆ ◆ ◆ —
No plastic meshes.

Despite their widespread use, they have almost no credible or legitimate use.

Not for urgent cases.

Not for elective cases.

(Only the infrequent missing wall, e.g. tumor resection.)

They make failures and complications.

Despite what “the companies” and their white knights tell you / sell you, hernias can be fixed without them, without complications and failures.

— ◆ ◆ ◆ —
Biomatrices are not needed for primary repairs.
Proper first time repair will not yield or herniate.

They are essential for reconstruction & redo.
Use them to gusset, buttress, and reinforce the reduction and repair of native elements.

HERNIAS & ABDOMINAL WALL DEFECTS

CRUCIAL SCIENCE, ART, & TECHNICALITIES

These details make the difference between a one-time assured successful restoration or reconstruction, versus a failed procedure that further damages the abdominal wall and makes it harder for the next surgeon to succeed.

If you haven't reduced and coapted native tissues, you haven't fixed the hernia.

"It seems there is never enough time to do something right, but always somehow enough time to do it over."

Get it right the first time !



"I'm under **CONSTANT STRESS** when I'm with him - - he's such a **CREEP.**"

"My relationship with her is a **CONSTANT STRAIN.**"
"Maybe you should try some **STRESS RELAXATION.**"

TECHNIQUES OF REPAIR

Advance and repair that which can be reduced.
If you haven't reduced and coapted native tissues, you haven't fixed the hernia.

Avoid edge-to-edge-repair.
*Edge-to-edge scars risk attrition, yield, and failure.
Edge repairs cannot reproduce the mechanical strength of the natural raphe's.*

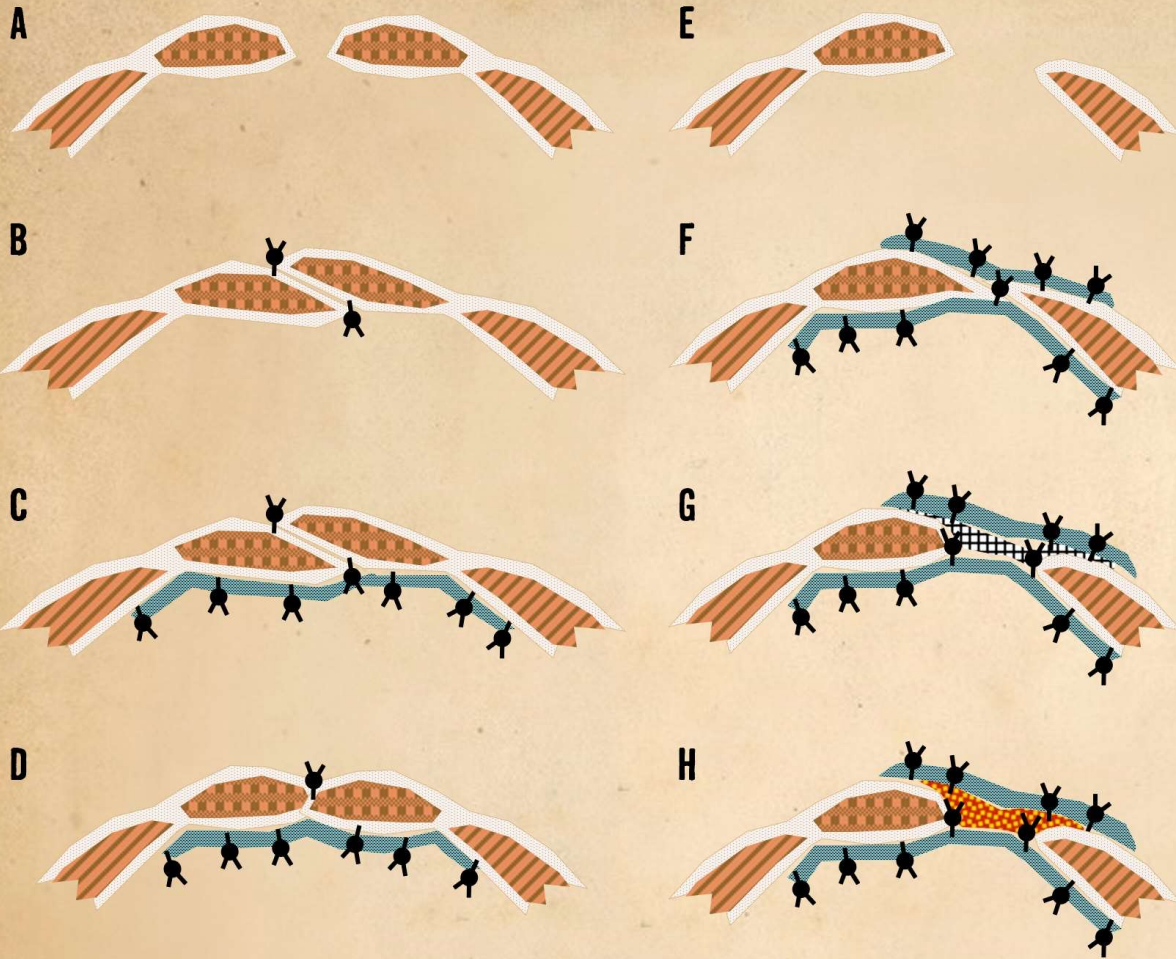
Overlap.
Overlap repairs increase contact area, defray stress, and put the repair in shear rather than tension.



Fasten to resist dynamic loads.
Adequate number & strength of fixation points, to share load and prevent failure: of the suture-tissue interface, of the fasteners (sutures), of the host material.

More is better.
*Do not try to save time, or you (or someone else) will be back to do it again.
Allow proper time to do a proper job.*

Actively manage stress relaxation during surgery.
*Use reduction clamps and incremental strains.
Map sutures & matrices to the native elements, then fit them all together according to the "blueprint".*



TECHNIQUES OF REPAIR

Advance and repair that which can be reduced.
*If you haven't reduced and coapted native tissues,
 you haven't fixed the hernia.*

Avoid edge-to-edge-repair.

Overlap.

Fasten to resist static & dynamic loads.



A, B. If the anatomy is there, repair it.

Laparotomy repair, 1st time simple hernia repair.

C. If reparable but under duress, reinforce it.

Redo hernia, or damage after morbid state, etc.

D. If only nominally reparable, reinforce & follow.

Watch long term, fix focal recurrence early.

E. If anatomy is missing, reconstruct it.

If native anatomy not reduced-coapted, it's not fixed.

F. If nominally repaired, add reinforcement.

Second piece of matrix, facing viable fascias.

G. If there is a gap, option use alloplastic mesh.

*Use omentum, endo abdominal fascia, facial flap, or
 biomatrix to buffer the mesh from hollow viscera.*

H. If a gap, option use muscle or fascial flaps.

*For volume only: omentum, thoraco-epigastric, et al.
 For durable structure: TFL-fascia lata, rectus femoris.*

It is an unusual hernia that autogenous tissues cannot be reduced and restored.

Do not do further damage by errant activities at the wrong time.

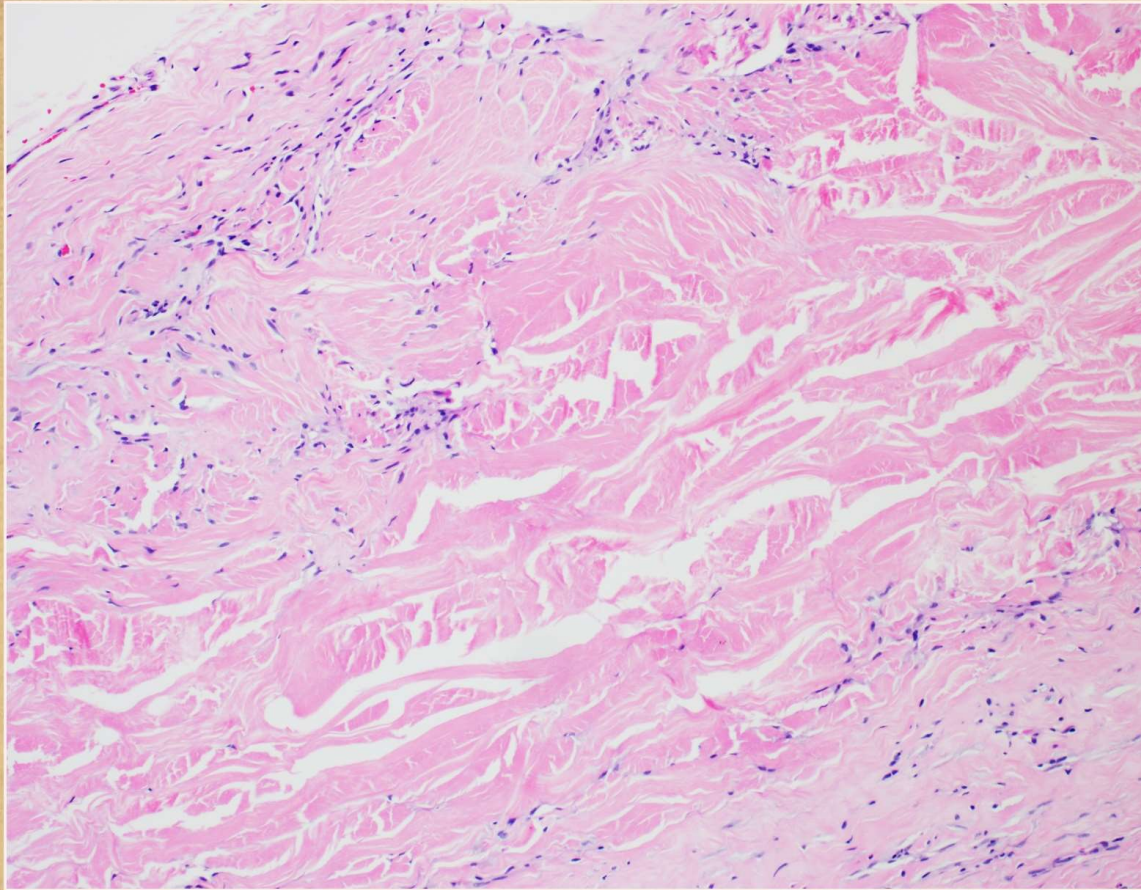
DO NOT use plastic meshes or composites.

Even newer meshes promoted as “resorbable” have problems – avoid them.

If plastic meshes are unavoidable for anatomical deficits, use simplest materials.

You must not leave bare matrix as the sole substitute – buffer it with flaps or biomatrix.

On irreducible gaps, use serial reduction & staged reconstruction. Physics is your friend.



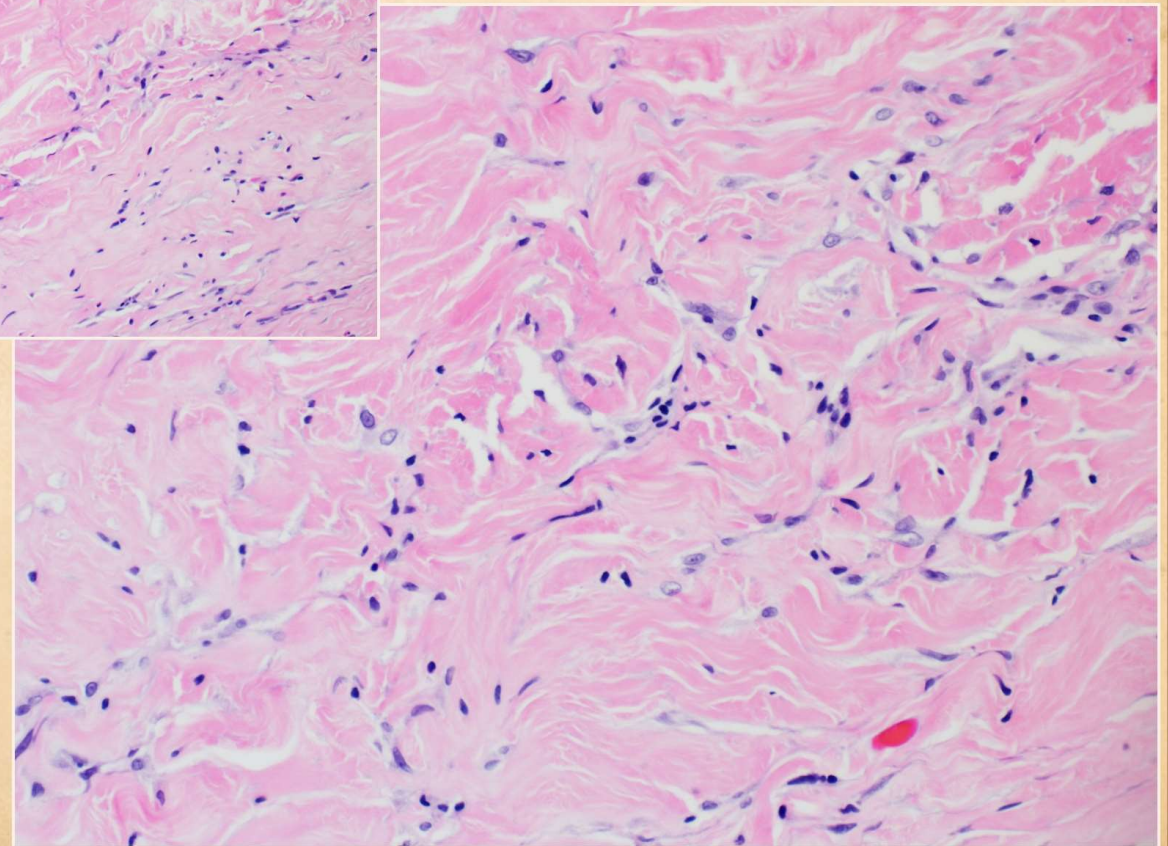
Histogenesis in Biomatrices.

Dermal, fascial, stromal, and fibromuscular biomatrices undergo a regenerative process that :

populates the matrix with embryonoid histogenic cells, fibroblasts and angiocytes (weeks),

establishes a living tissue comparable to all generic stromas and connective tissues (months)

gradually remodels the new tissue to the histo-architecture expected for the host tissue (years).



The well-engineered and well-behaved biomatrices :

never provoke or exhibit
an inflammatory or defensive response,

exhibit no signs of “wound healing” or reactive fibroplasia,

exhibit no inflammatory or cell mediated lysis,

gradually convert to human and host tissue
phenotype & chemistry by normal stromal turnover .



TECHNIQUES OF REPAIR

MISCELLANY

Allow proper time to do a proper job.
Do not skimp or cheat on technique.

This is reconstructive surgery, not "Name that Tune".

Do not be a rabid adhesiolysers.

This is reconstructive musculoskeletal surgery.

It is not bowel surgery (unless there is a fistula).

Avoid gimmicks.

Apply anatomy, physiology, engineering.

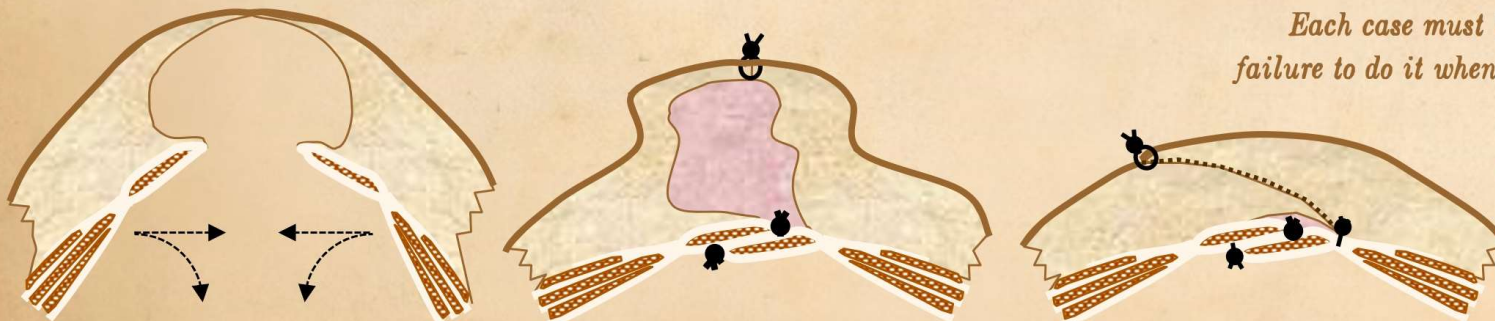
*Sampson's hair, Linus' blanket, Wizard of Oz's gifts,
a Kid & his sneakers, a hernia Surgeon & his Botox.*

Conquest, War, Famine, Death • **E • DS • M • I** • Edema, Deadspace, Motion, Inflammation

Do panniculectomy as needed.

Vertical. Horizontal.

*Each case must be judged individually, but
failure to do it when needed risks seroma & abscess.*



Compression girdle necessary.

*Controls edema, motion,
and deadspace.*

Binder not necessary.

*The reconstruction must be
self-supporting and
structurally
sound.*

Skin and subcutaneous fascias must be congruent and form-fitting to the muscular abdominal wall.

If not, there will be deadspace, shear (motion), then wound bursitis (inflammation). Seroma and failure risk are high.

Do panniculectomy to bring skin and subcutaneous adipose back into form-fit congruence with abdominal wall.

SUMMARY

A. On a primary laparotomy that can be closed :
*Close the abdominal wall **CORRECTLY**, and thereby prevent hernia.*

B1. Laparotomy cannot be closed – and – evisceration is a risk :
Manage open abdomen. If using a retainer material, use biomatrix.

B2. Laparotomy cannot be closed – evisceration is not a risk :
Open wound care until wound is ready for closure.

B3. For either situation, when wound is ready to close :
*Close skin & adipose only. **DO NOT** damage abdominal wall.
Then, wait requisite time to restore abdominal wall (9-12 months).*

C. On primary hernia repair, reduce & restore native elements .
Reinforcing biomatrix often not required, but use if any uncertainty.

D. On redo hernia repair, or if other factors compromise status :
Reduce & restore native elements. Reinforce with a biomatrix.

E. If native elements cannot be fully advanced and coapted :
Use biomatrix to lock in the gains, then return for serial reduction.

F. **DO NOT** use alloplastic meshes on ordinary hernia repairs .
*Native anatomy can nearly always be restored (w/wo reinforcement).
They are not needed, they fail, they cause serious complications.*

G. Plastic meshes optional in the infrequent resected wall cases .
*Used **PROPERLY**, they are structurally sound, but must be buffered.*

H. But, “bare” biomatrix, is also not a durable repair :
*Autogenous elements must be restored – nothing else counts.
If bare areas are truly unavoidable – double up, use mesh, or use flaps.*

I. When time & circumstances allow, do panniculectomies if needed .



Approached from the correct context and with correct technique, ventral hernia surgical success should be nearly 100%.

THE 5 D'S OF MEDICINE



CURE

DISEASE



PREVENT

DEAth



DEFICIENCY
&

DEFORMITY

RECONSTRUCT



DISABILITY

REHABILITATE

THE CONTEXT OF A HERNIA

DUALITY OF PERCEPTION

Acute abdomen
Complications of hernia

General Surgery

Treat & Cure **D**isease
Save lives from **D**eath

*Incarceration, Obstruction,
Infarction, Peritonitis,
Critical illness, Expedient closure.*

Chronic hernia
Planned reconstruction

Plastic Surgery

Reconstruct **D**eformities
Rehabilitate **D**isabilities

*Pain, Bowel & Urine, Ulcers & fistulas,
Arthritis, Center of gravity problems,
Chronic pain, ADL dysfunctions.*



of Amputation

*An operation
to separate the disease
from the patient.*

- versus -

*An operation
to make a functional stump
that can wear a prosthesis.*

They can look the same,
but they are not.



Law of
inevitable
surgical
countability
and
accountability.

A patient with a problem
is destined to have
X number
of operations.

You decide how
to allocate them :

One big heroic operation,
then the rest cleaning up
the mess you made .

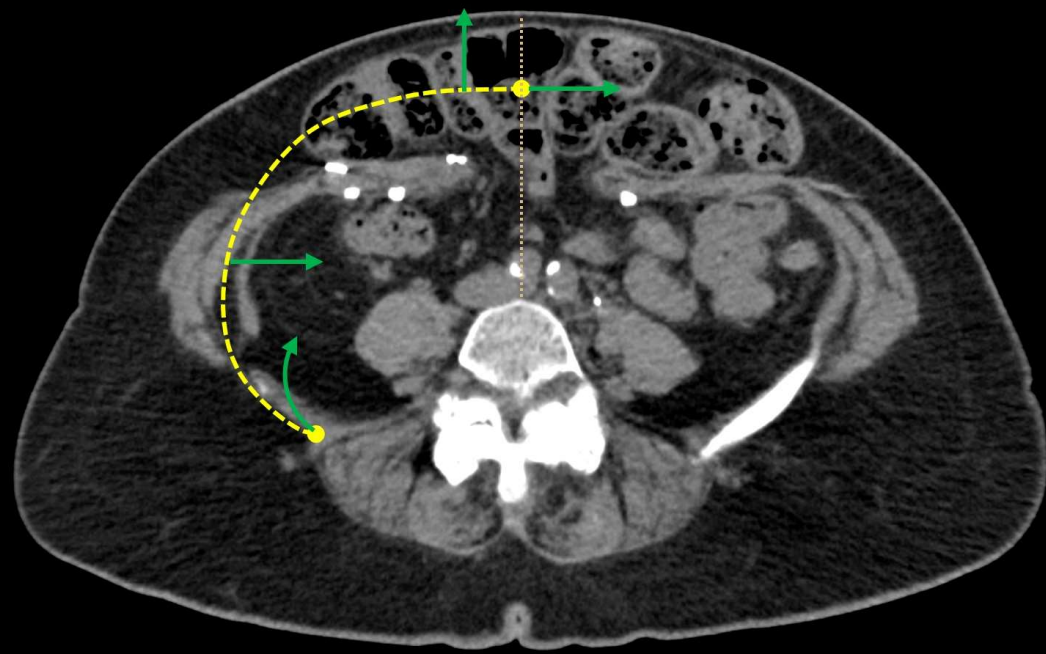
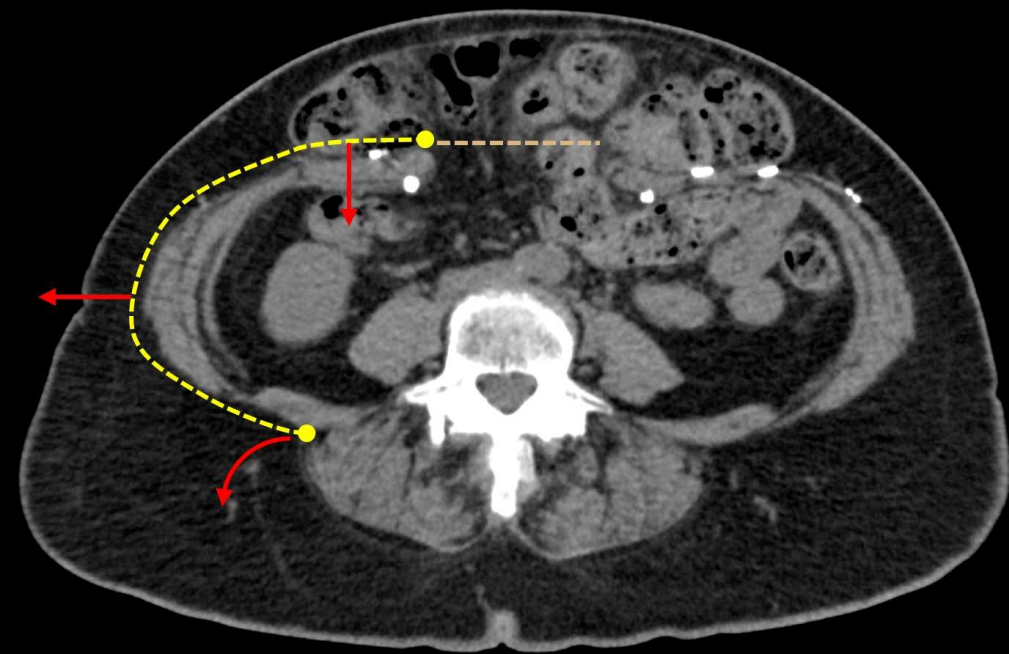
- OR -

Staged incremental
procedures,
each successful,
leading to a grand
overall success.



VENTRAL HERNIA
SAMPLER OF CASES & KEY CONCEPTS





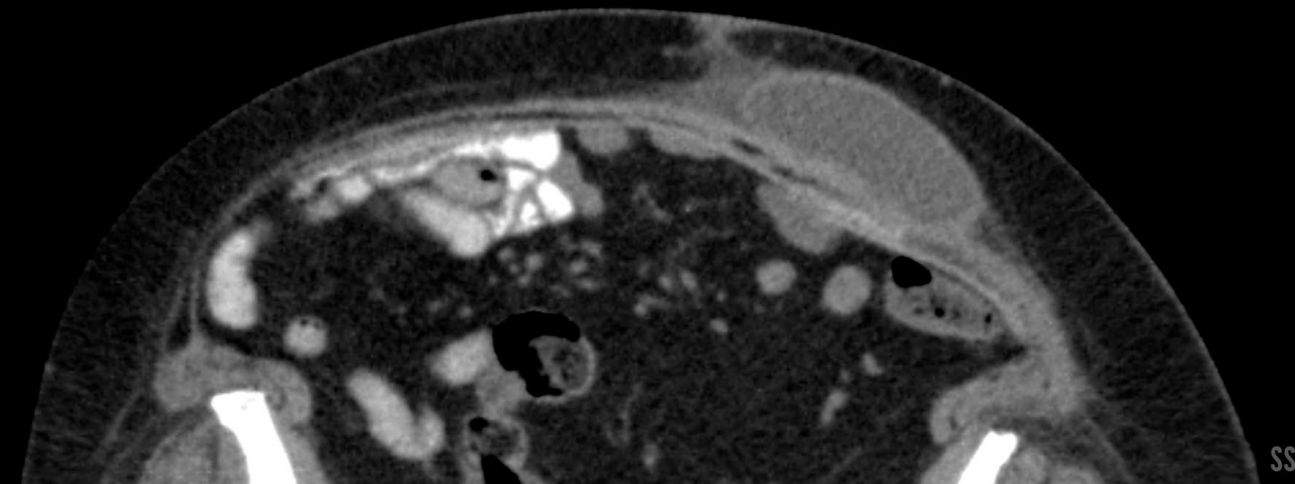
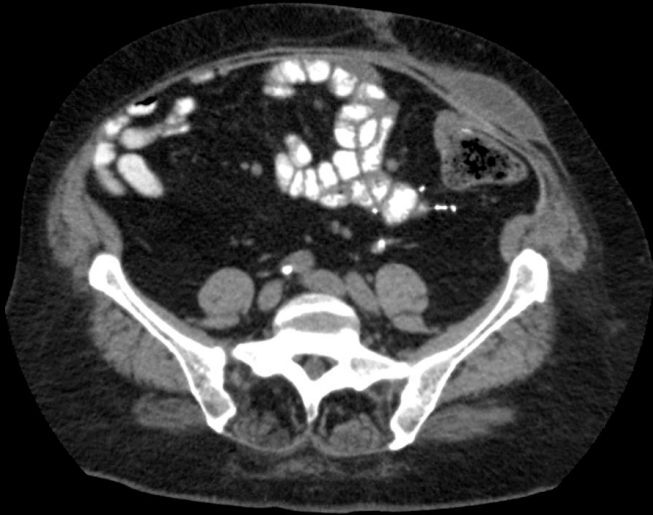
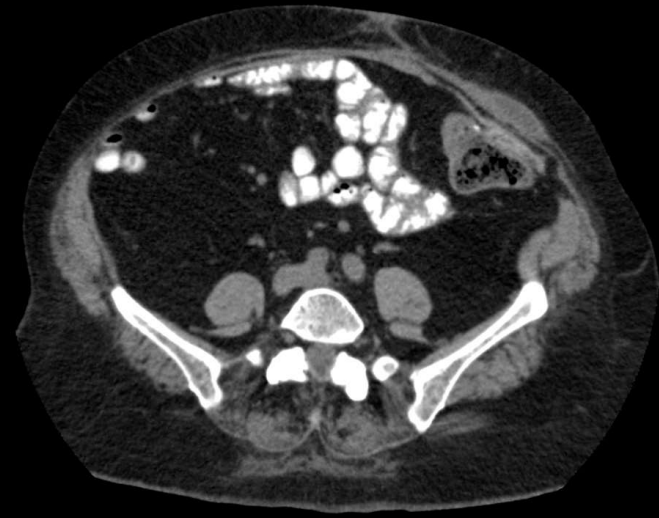
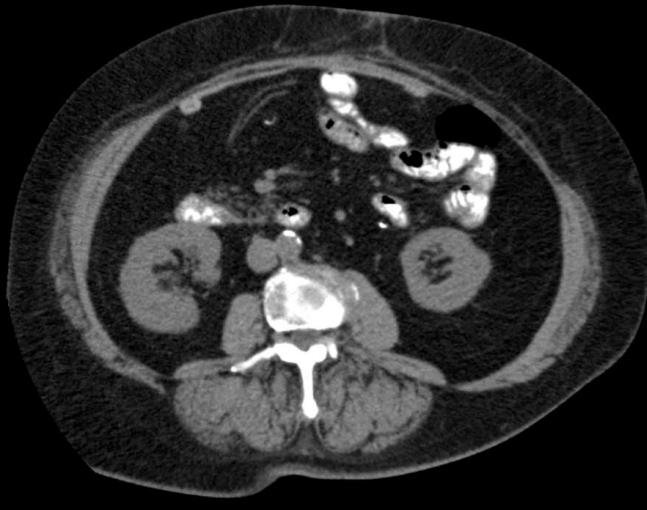
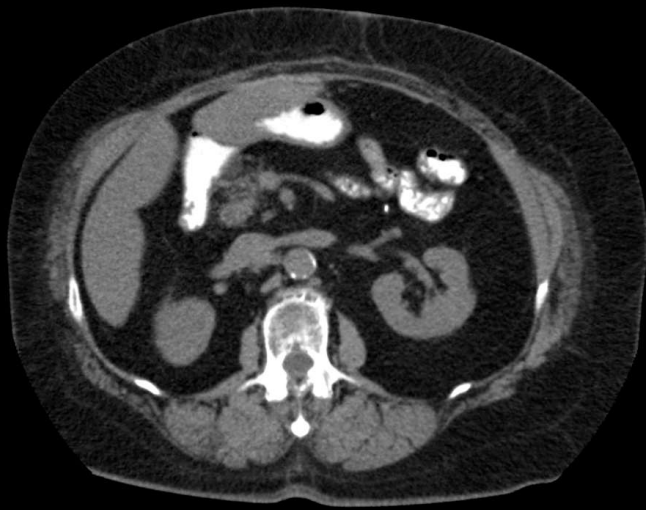
Abdominal wall geometry & physics.

Most times, perimeter-to-cross section ratios are not altered. So, native fascias will advance, and viscera will reduce, without altering intra-abdominal pressures.



67 f Ongoing hernia after multiple surgery & failed hernia repairs.

*Rx Advance and repair native elements.
Reinforce with Surgimend matrix (bovine dermis).
Minor panniculectomy. (PROTOTYPICAL CASE.)*



65 f

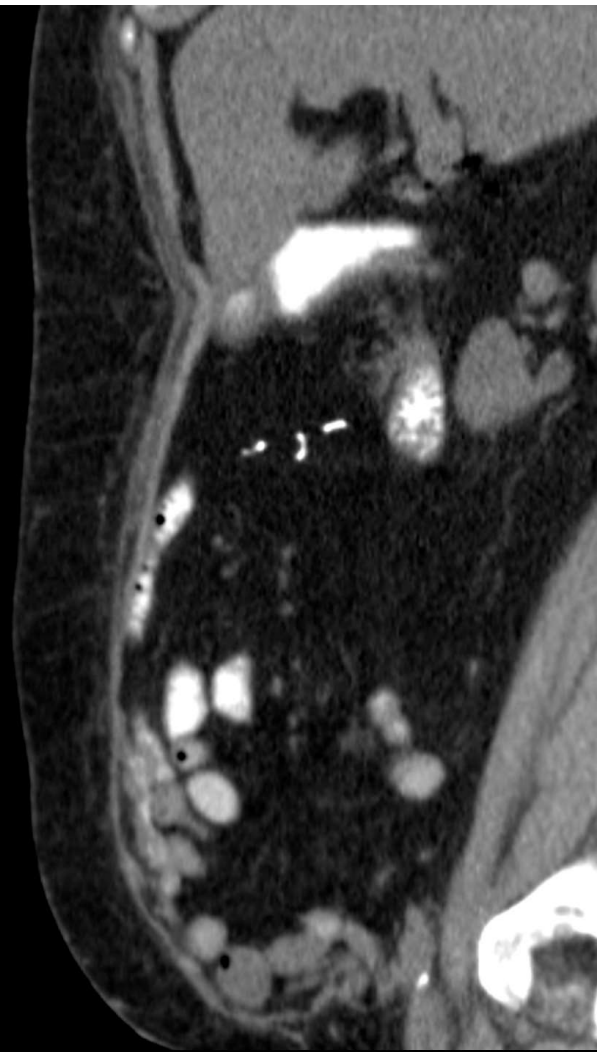
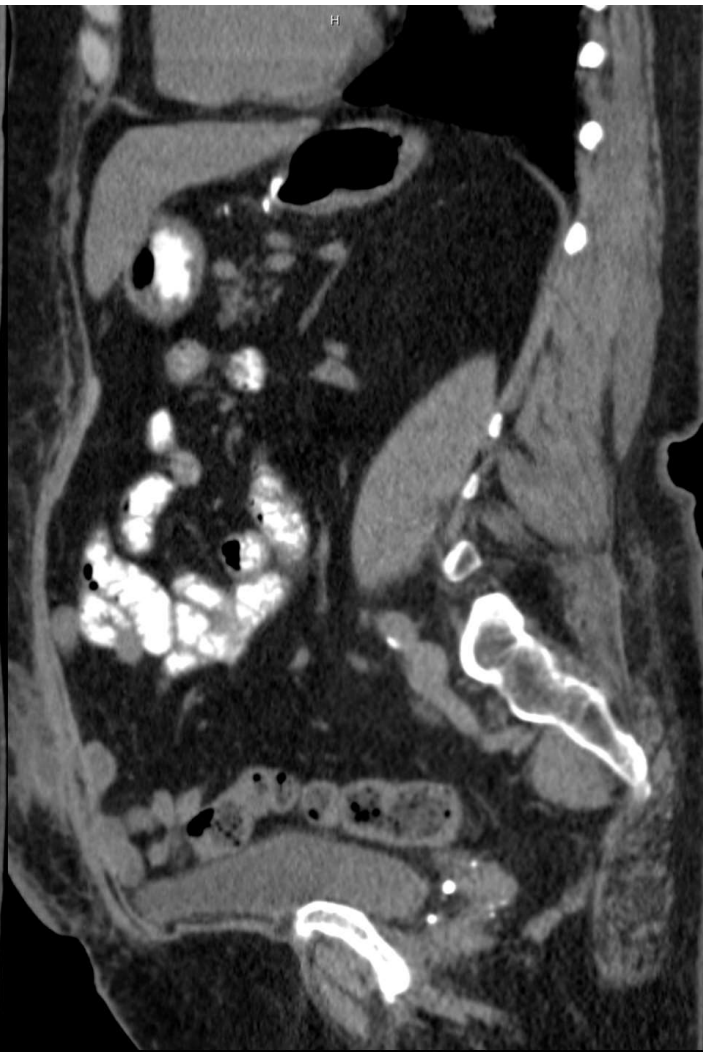
Recurrent ventral hernia ,
after multiple hernia surgery & complications .

Rx

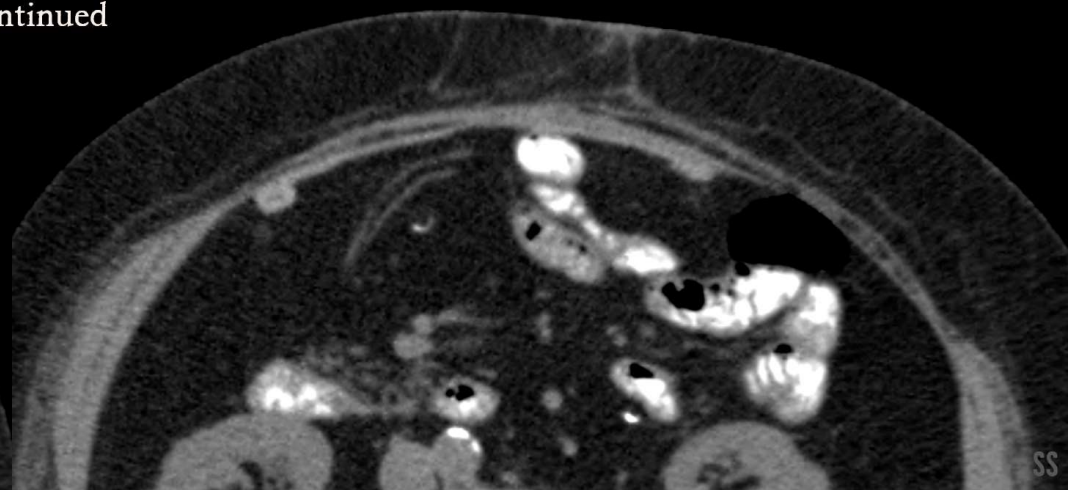
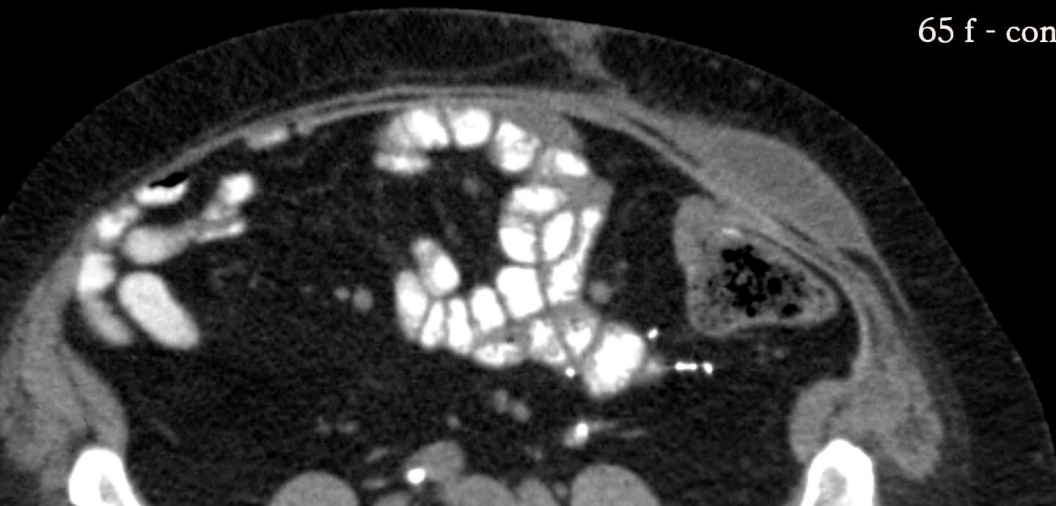
Advance and repair native elements .

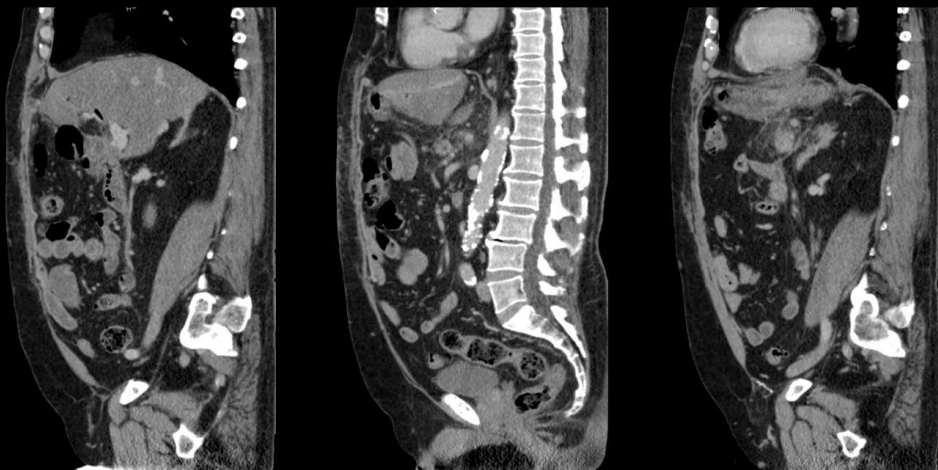
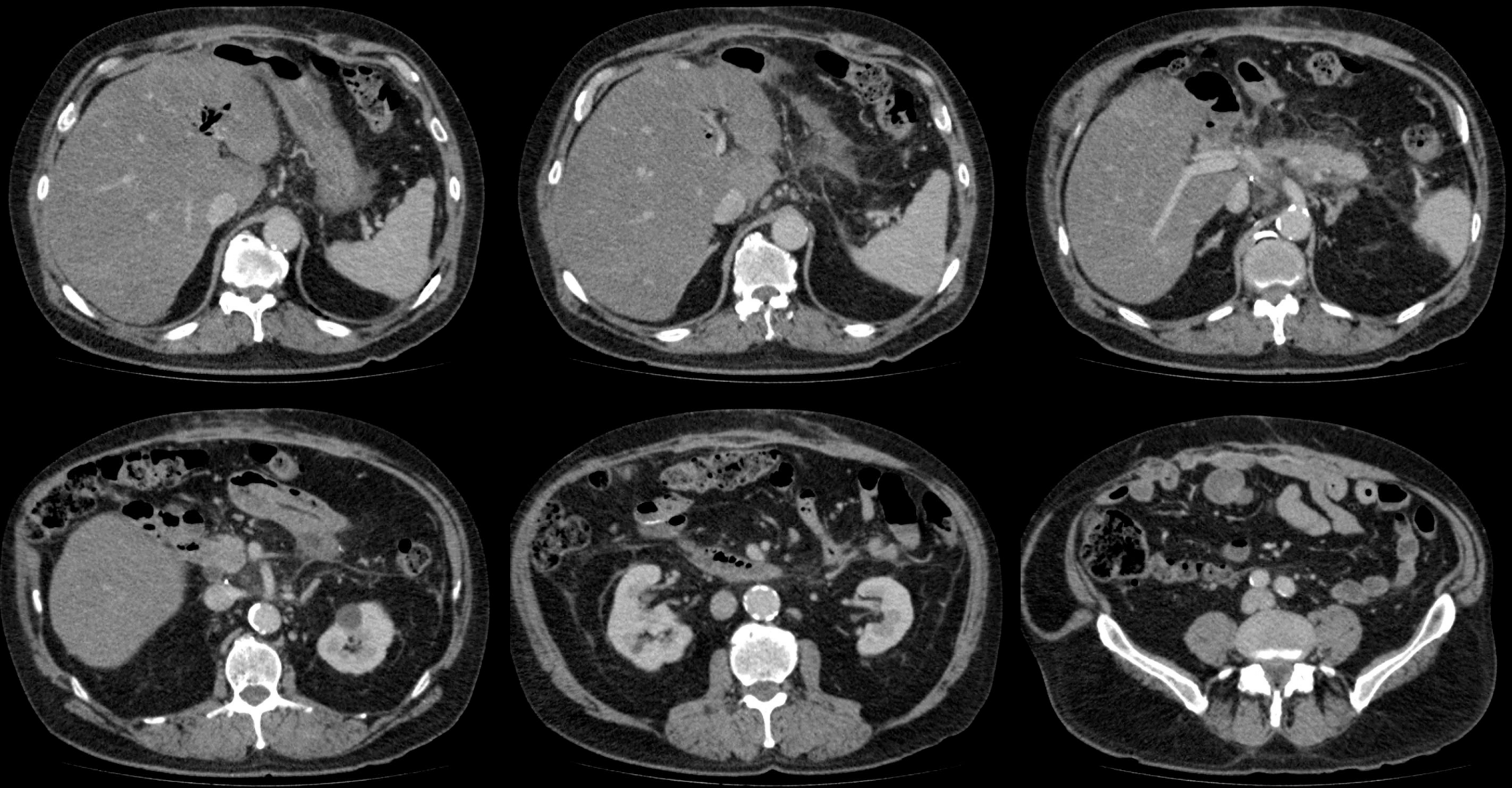
Reinforce with Surgimend matrix (bovine dermis) .

CT 9 months after repair . Intact abdominal wall .



65 f - continued





70 m

Recurrent ventral hernia ,
after bile duct cancer surgery with alloplastic mesh,
then multiple hernia surgery & complications .

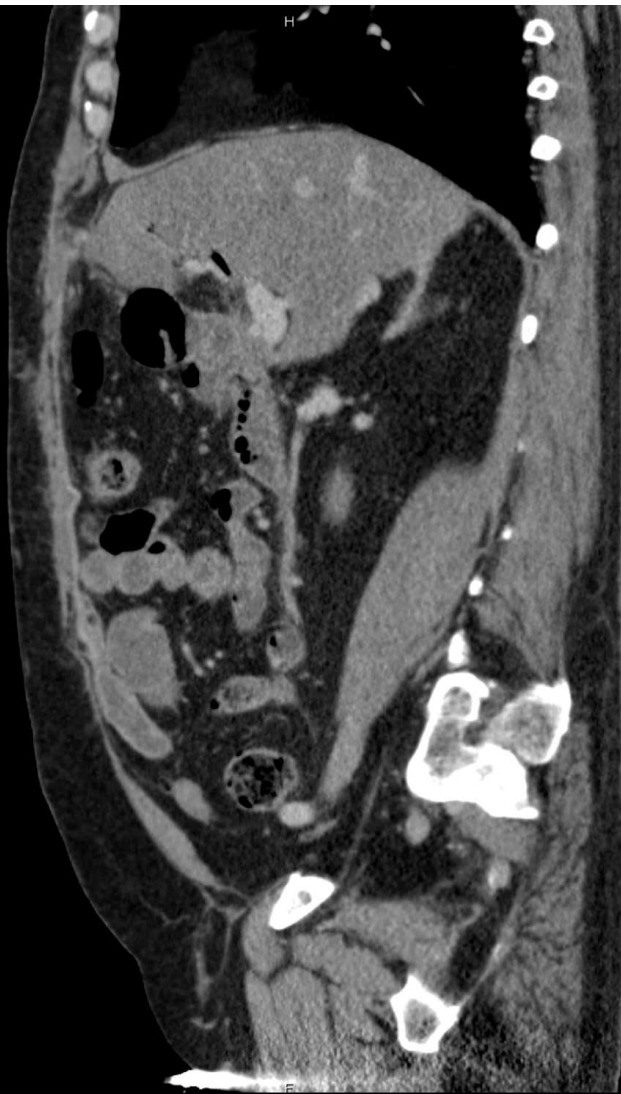
Rx

Reduce hernia.

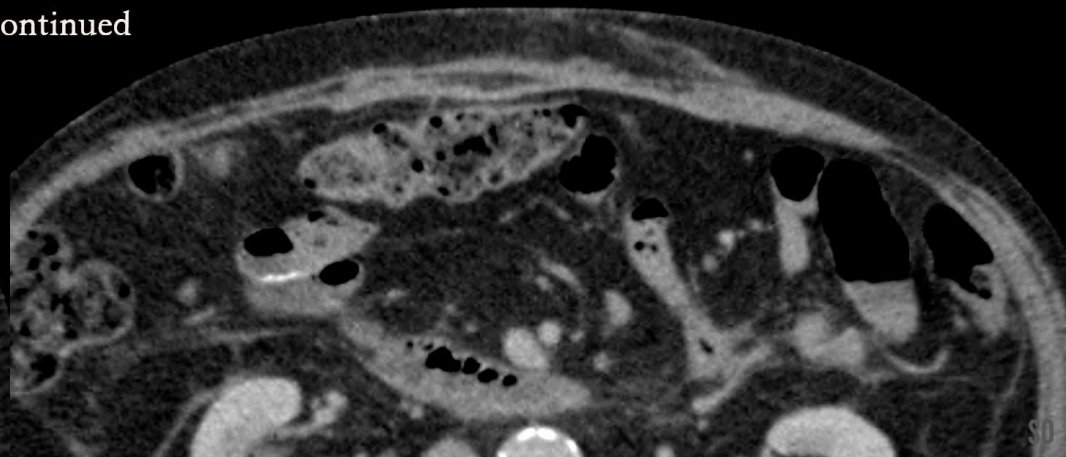
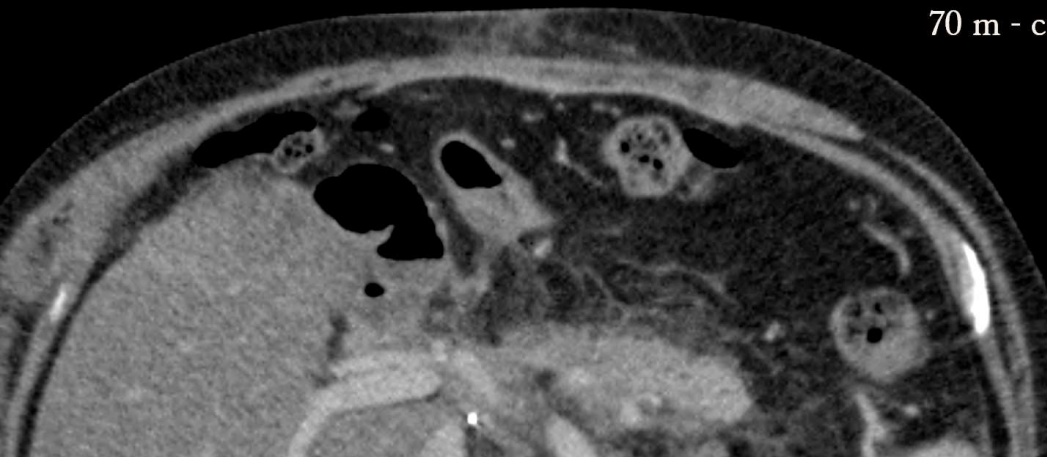
Advance and repair native elements.

Reinforce with Surgimend matrix (bovine dermis) .

CT 4 months after repair . Intact abdominal wall .



70 m - continued





74 f

Ventral hernia, open wound, and enteric fistula .

After colon & endometrial cancers ▶

Surgery & radiation .

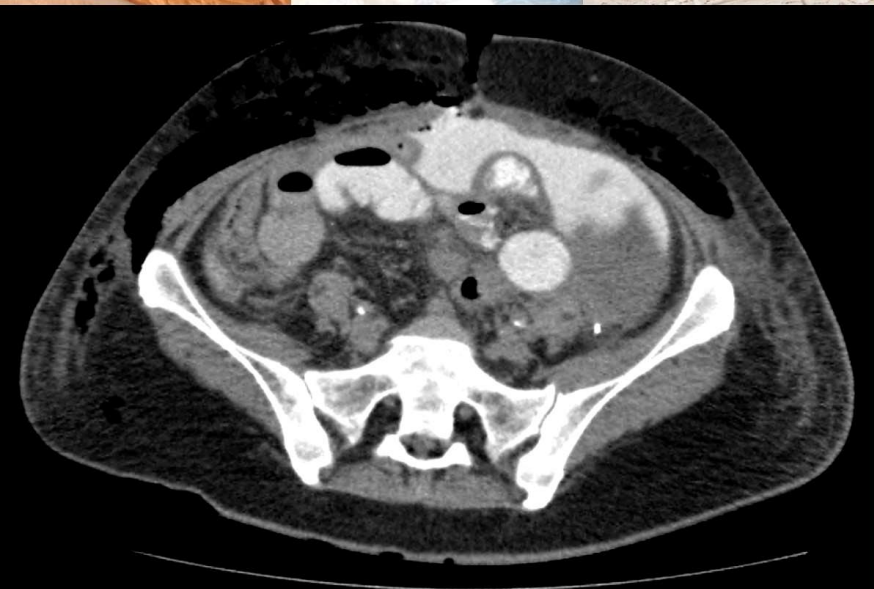
Rx

Repair fistula , close bowel .

Advance and repair native elements .

Reinforce with Surgimend matrix (bovine dermis) .

Partial panniculectomy .



“Surgical Archaeology”
An operation or a dig ?

66 m

Chronic recurrent hernia .

Chronic ulcers, abscess, bowel erosion & fistula .

Multiple retained meshes .

Complex abdominal wall injury and defect .

Rx

Explant multiple meshes .

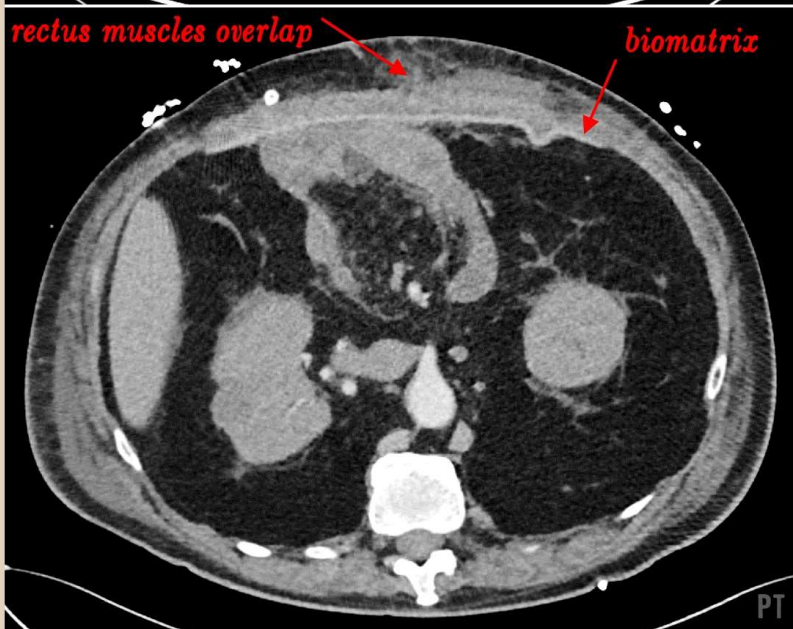
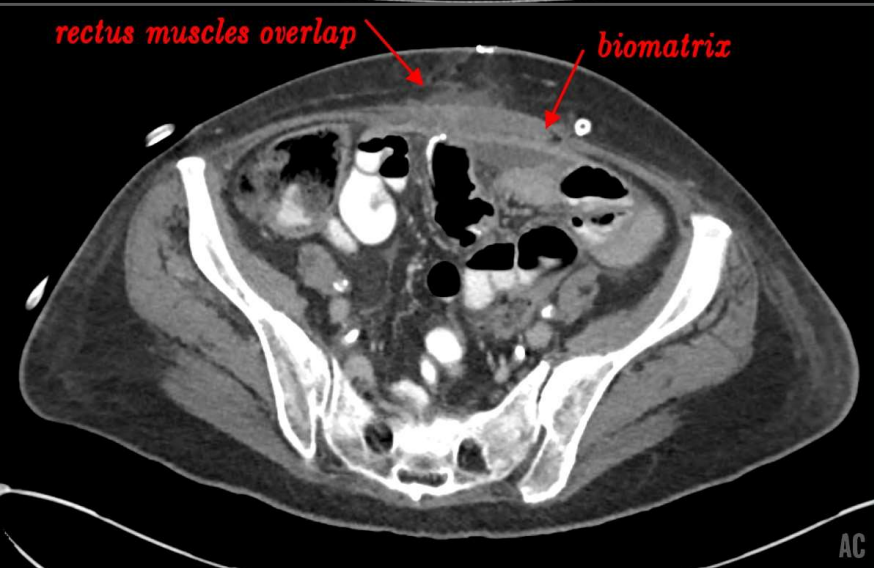
Resect & repair bowel .

Reduce prolapsed bowel .

Advance-repair native wall .

Reinforce with Surgimend matrix (bovine dermis) .

Lower abd panniculectomy .





25 m : Ventral hernia after gunshot injury and complications .
Two stage (serial) reduction and restoration .

Op 1 : Advance native elements .

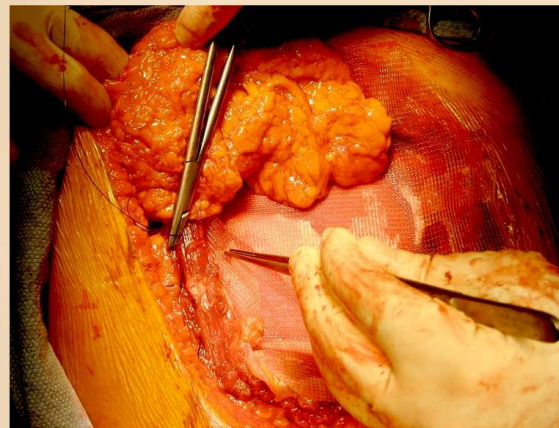
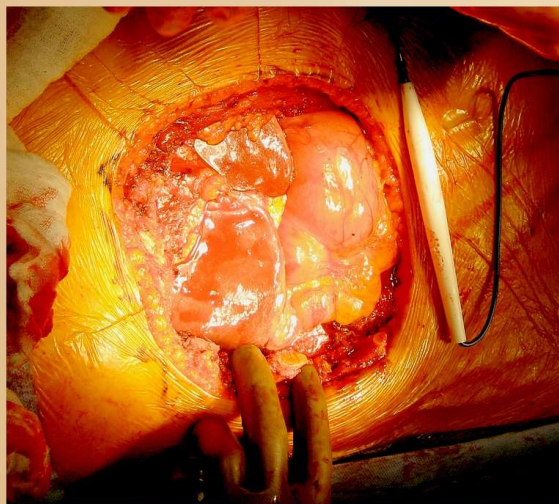
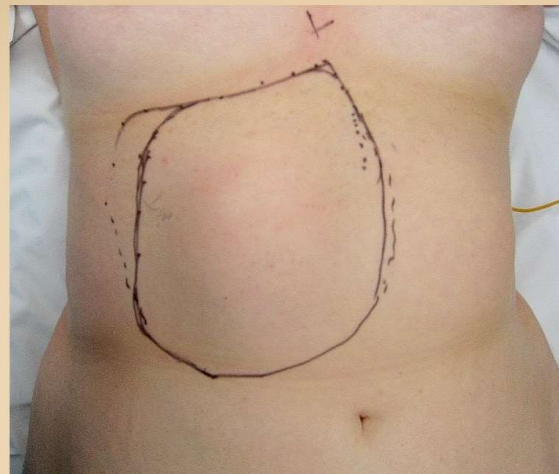
Lock in gains with biomatrix (FlexHD, human cadaveric dermis.)

Op 2 : & 2 months - Serial reduction, direct repair of remaining defect .

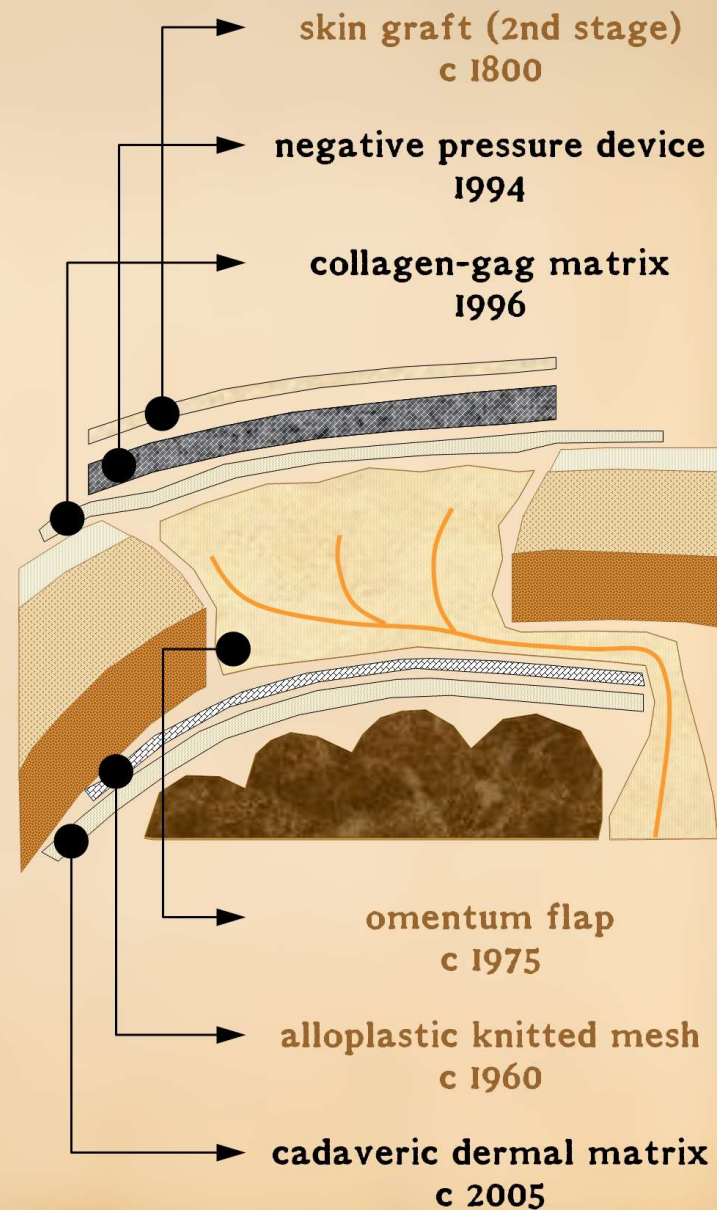
Op 3 : & 7 years - Focal recurrent hernia at site of prior small wound .

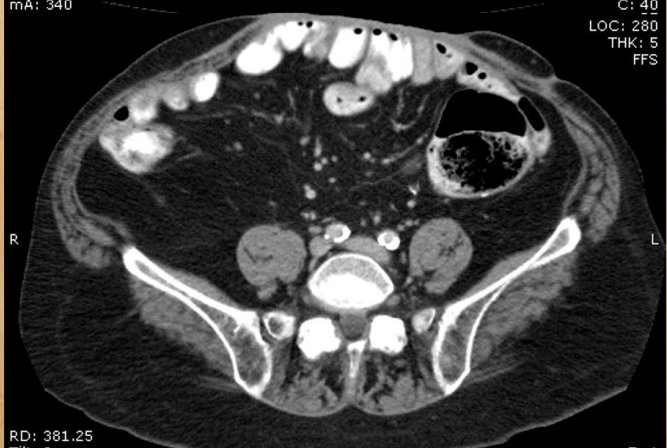
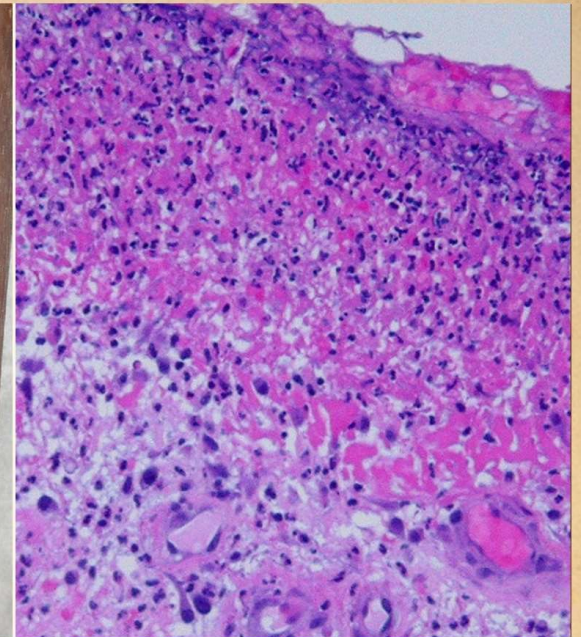
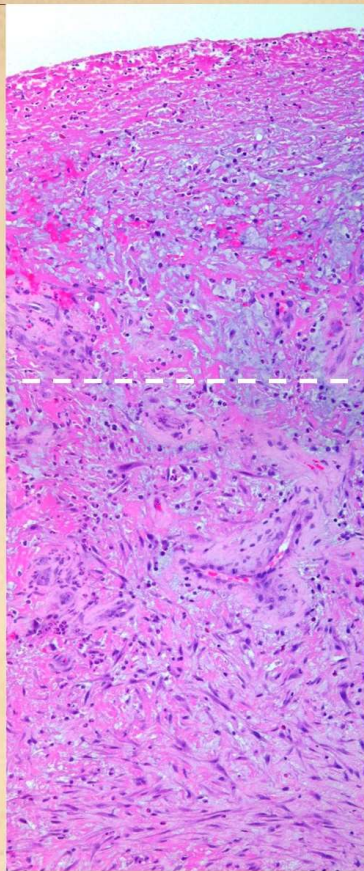
Repair and reinforce with Surgimend matrix (bovine dermis) .

All good 3 years later, all intact .



74 F, Chondrosarcoma of chest and abdominal wall.

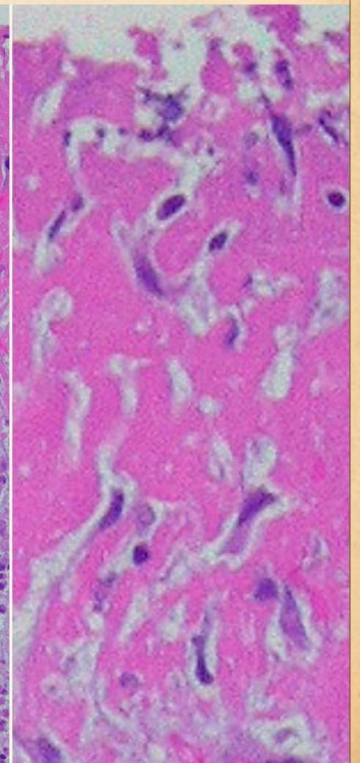
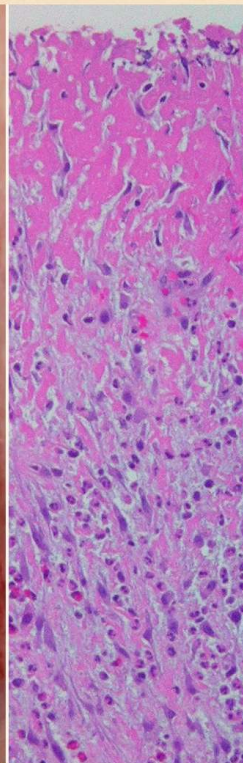


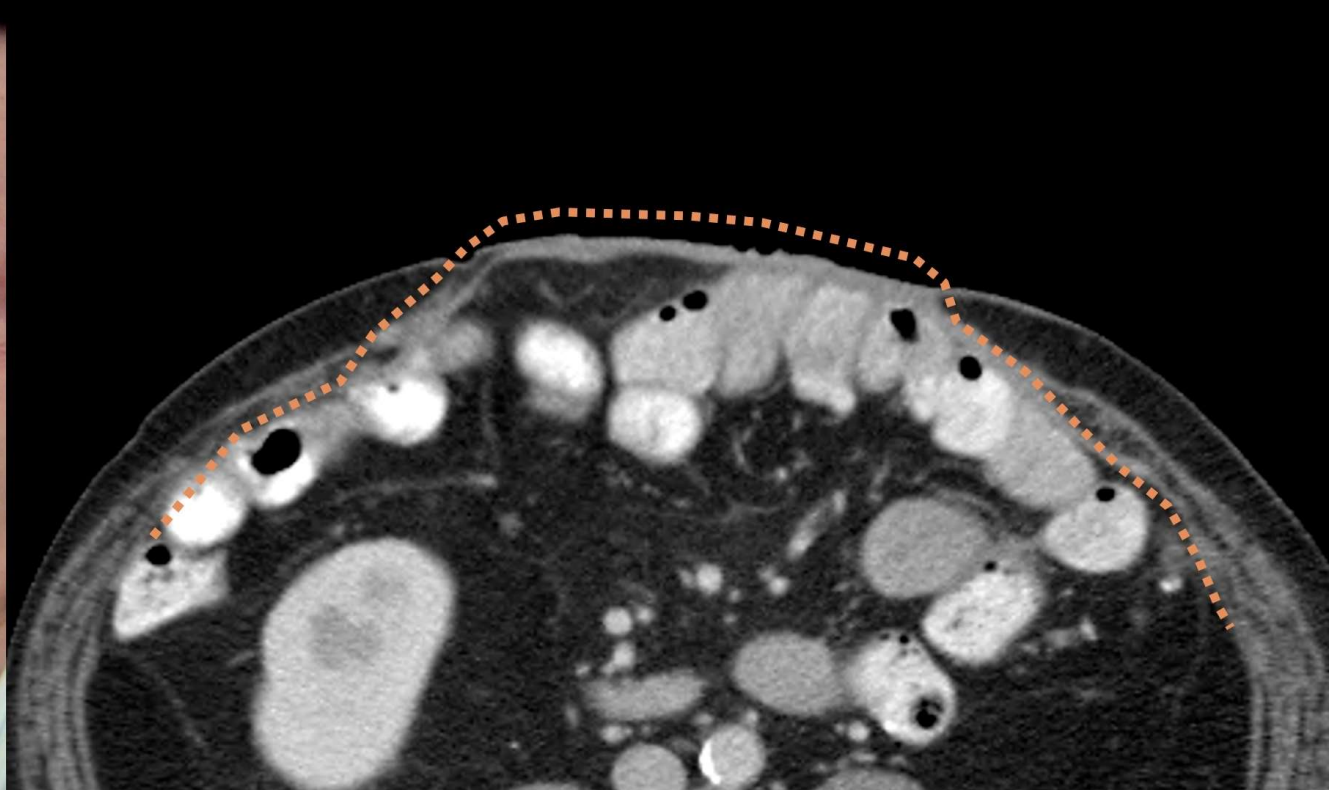
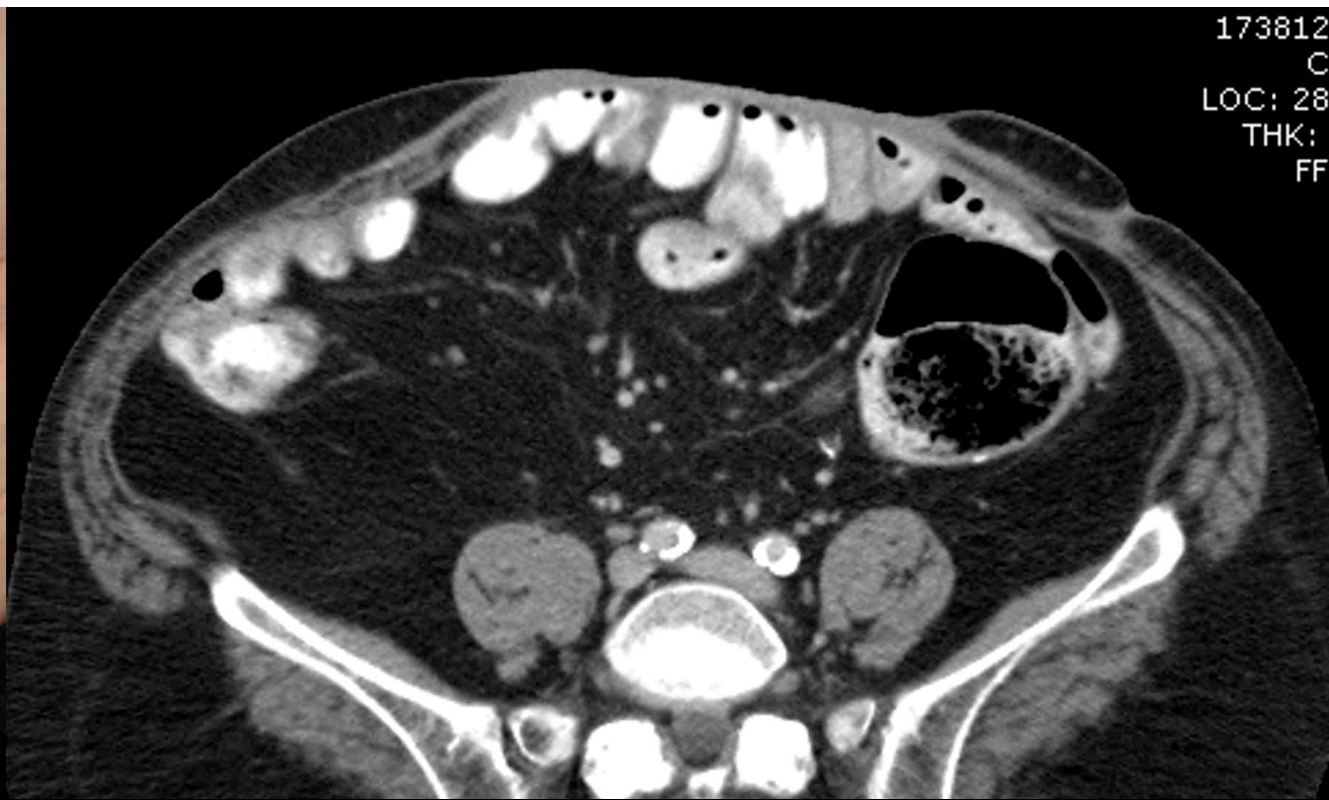


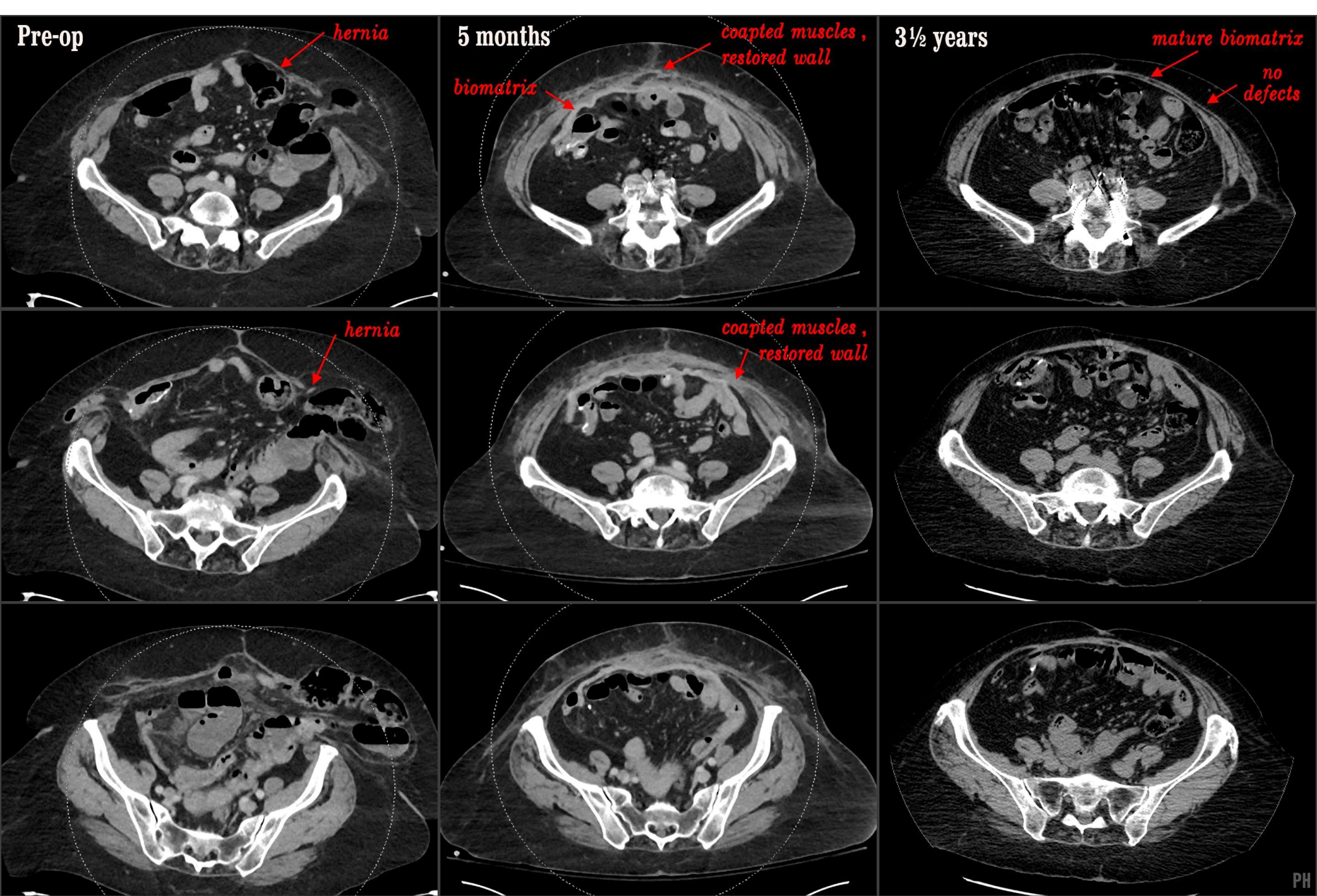
63 f Chronic multiple hernia , multiple failed "repair", chronic ulcer – after diverticular surgery & complications .

Rx
Repair native elements .
Reinforce with Alloderm matrix (human dermis) .

Note method to manage the wounds – keep it !







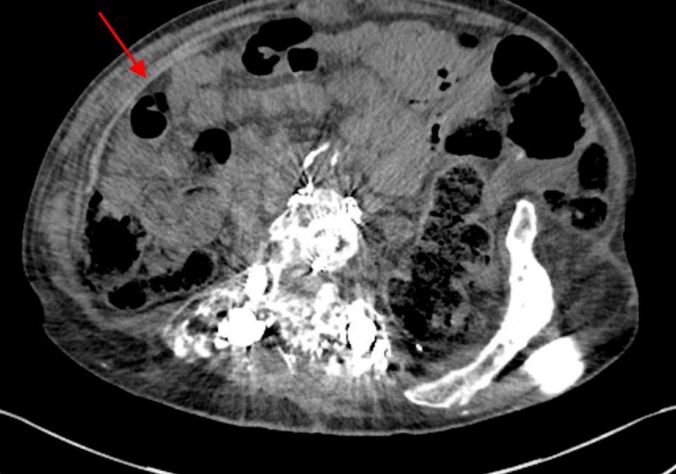
PH

75 f : Recurrent multiple ventral hernias ,
 multiple failed hernia “repairs”,
 obese ptotic lower abd. panniculus .

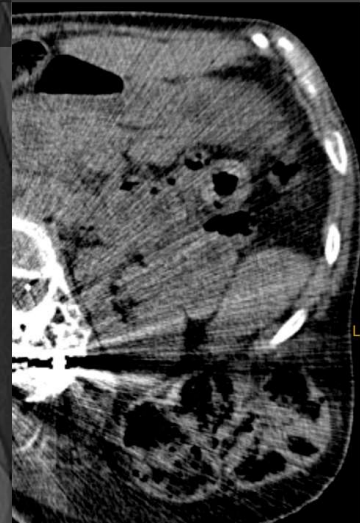
*Rx : Reduce. Advance & repair native wall.
 Reinforce w Surgimend (bovine dermis) .
 Lower abdominal panniculectomy.*

CT : Pre-op.
 5 months post-op.
 3.5 years – incidental, for back surgery.

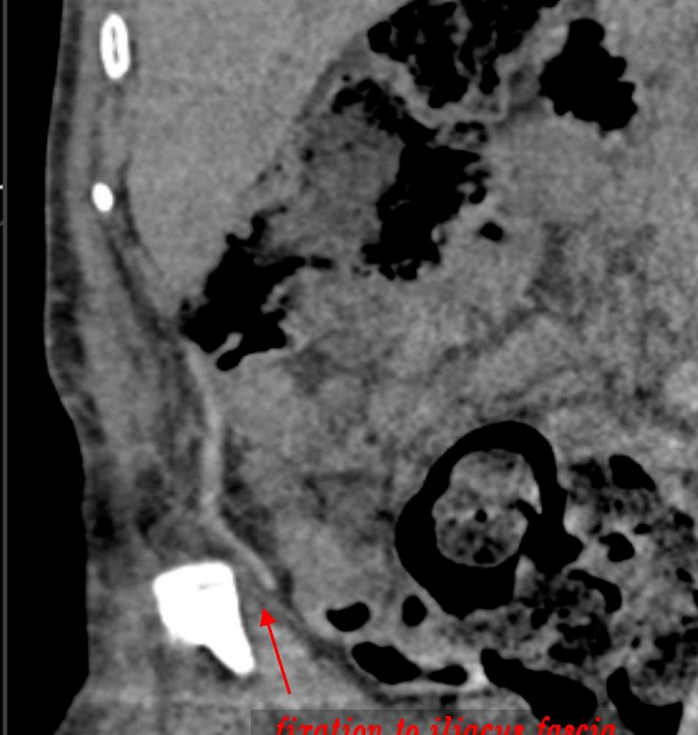
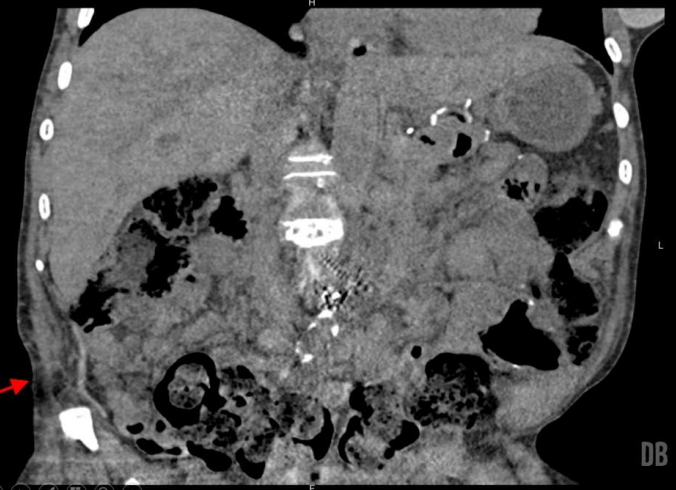
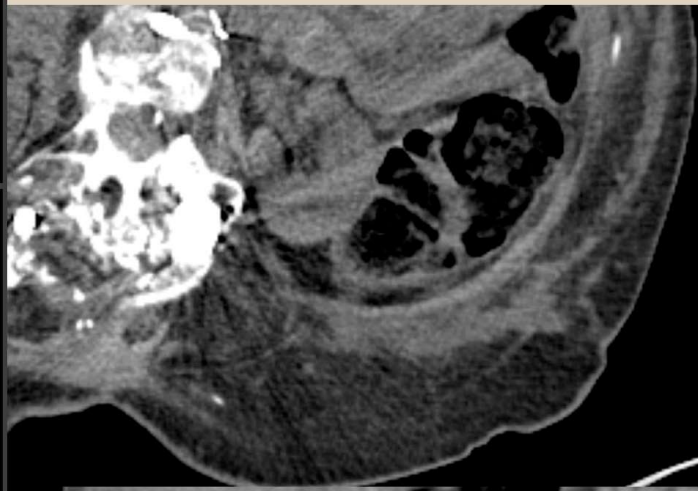
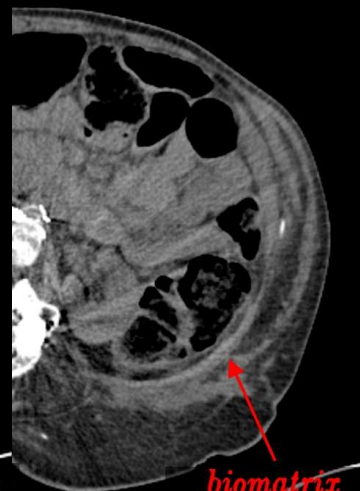
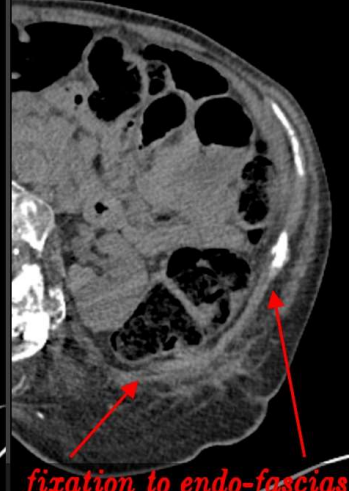
biomatrix

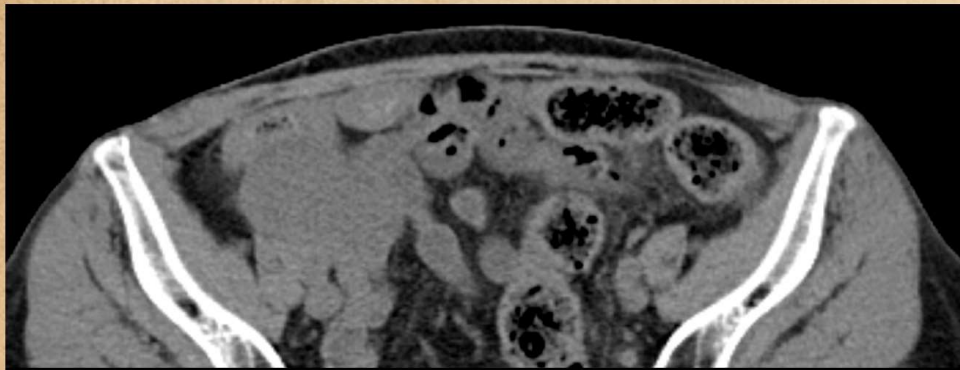


5 years prior to surgery

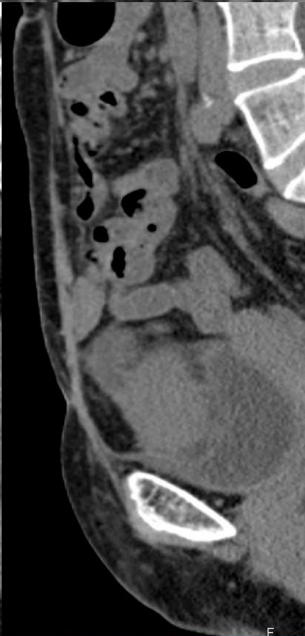
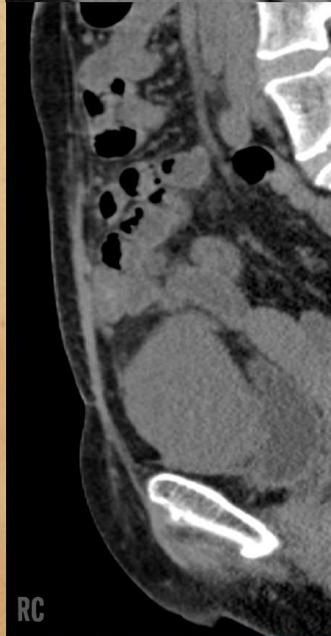


67 f Two incisional hernias, after spine surg:
(1) RLQ & flank, (2) L lumbar, large prolapse.
Prior failed hernia "repairs".
*Rx Simultaneous but separate operations :
Reduce. Advance and repair native elements.
Reinforce with Surgimend (bovine dermis).*
CT 6 months after repair .

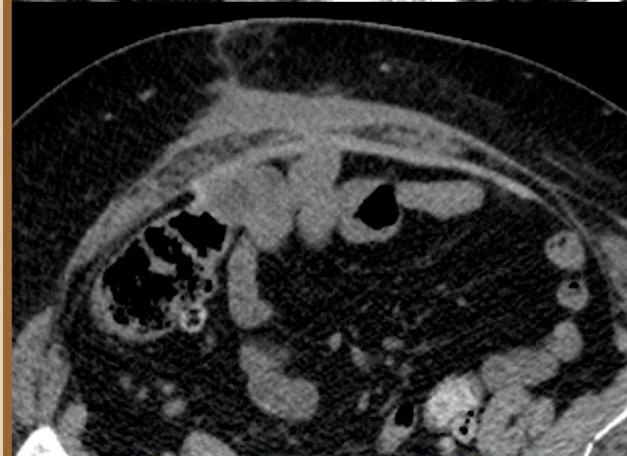
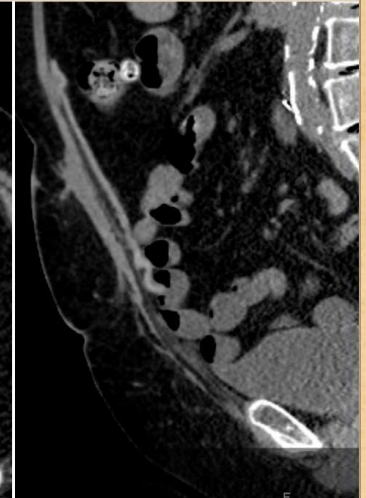




60 f Incisional hernia.
 Stoma site hernia.
 (Diverticulitis & complications.)
 Multiply recurrent.
 Obese ptotic abd panniculus.
Rx Omentectomy.
Repair both hernias.
Reinforce w Surgimend matrix.
Lower abd panniculectomy.
 CT 16 months later. Intact .



61 f
 Incisional hernia ,
 after renal transplant
 & complications.
 Recurrent.
Rx
Reduce hernia.
Repair native fascias.
Reinforce w
Surgimend.
 CT 4.5 years later
 (for other reasons).
 Intact abd. wall .





11/30/2020 14:09



40 f

Chronic recurrent ventral hernia,
multiple failed hernia "repair",
multiple meshes & complications,
chronic ulceration,
consequences of C-section .

Rx

Reduce hernia.

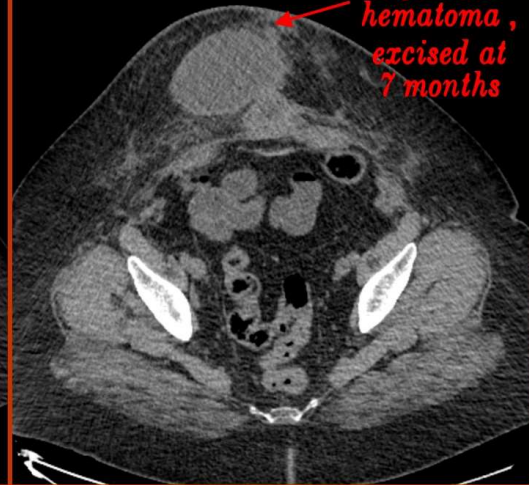
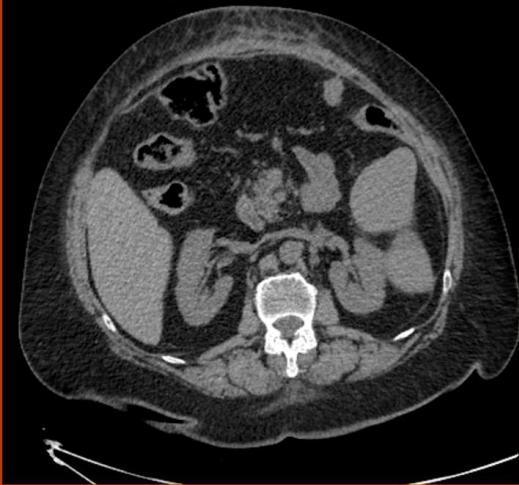
Advance and repair native elements.

Reinforce with Surgimend matrix (bovine dermis).

Panniculectomy & excision of ulcers.

Abdominal wall intact and competent at 13 months .

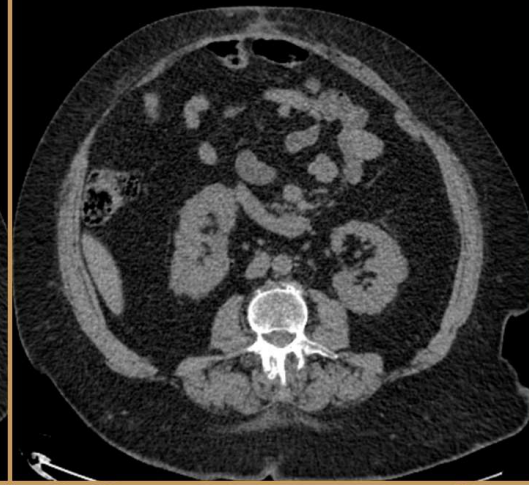
3 months after 2nd operation, abdominal wall fully restored ▶

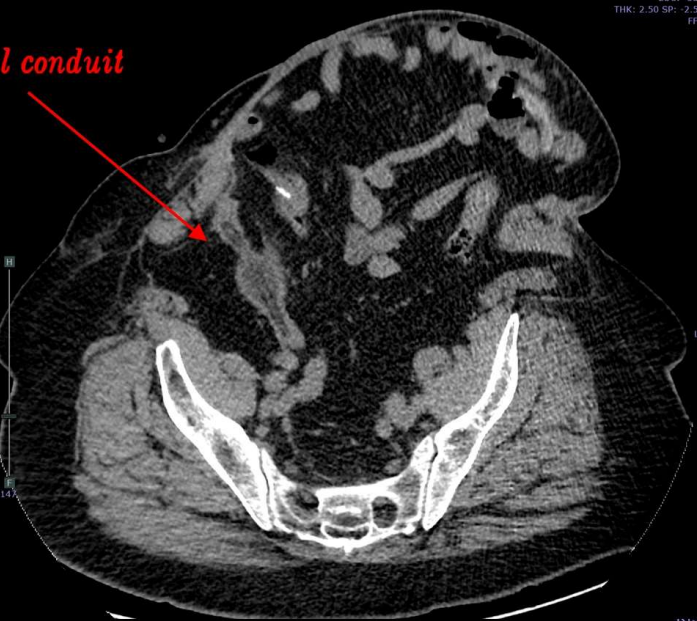


54 f Chronic recurrent ventral hernia , complex defect & damage , multi-story hernia & plastic mesh , obesity & ptotic panniculus .
Op 1 : Complex reduce & excise multiple meshes . Autogenous repair & Surgimend matrix .
Op 2 : & 8 months – serial reduction , fascias & abd wall fully restored . (Subflap hematoma , benign.)
Op 3 : & 7 months – Excise chronic hematoma , lower abd panniculectomy , reconstruction complete .
2nd CT 20 months after final repair . All intact .

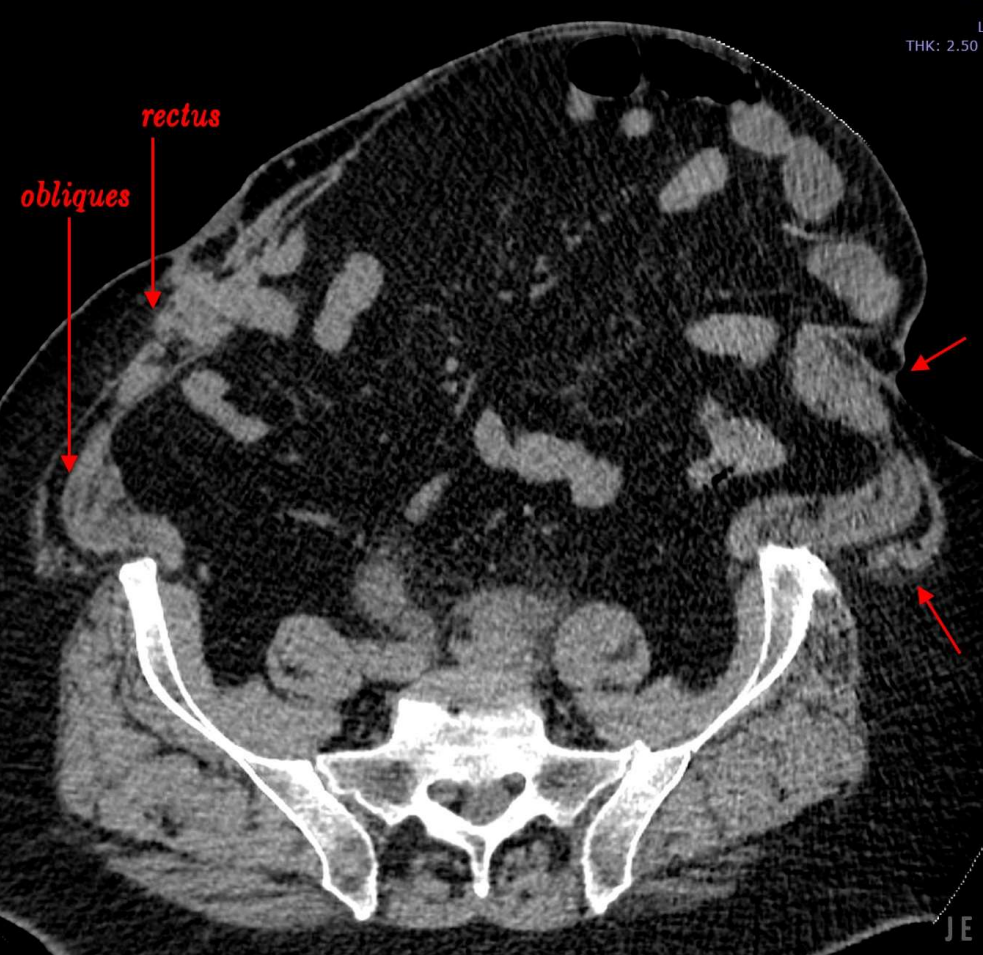


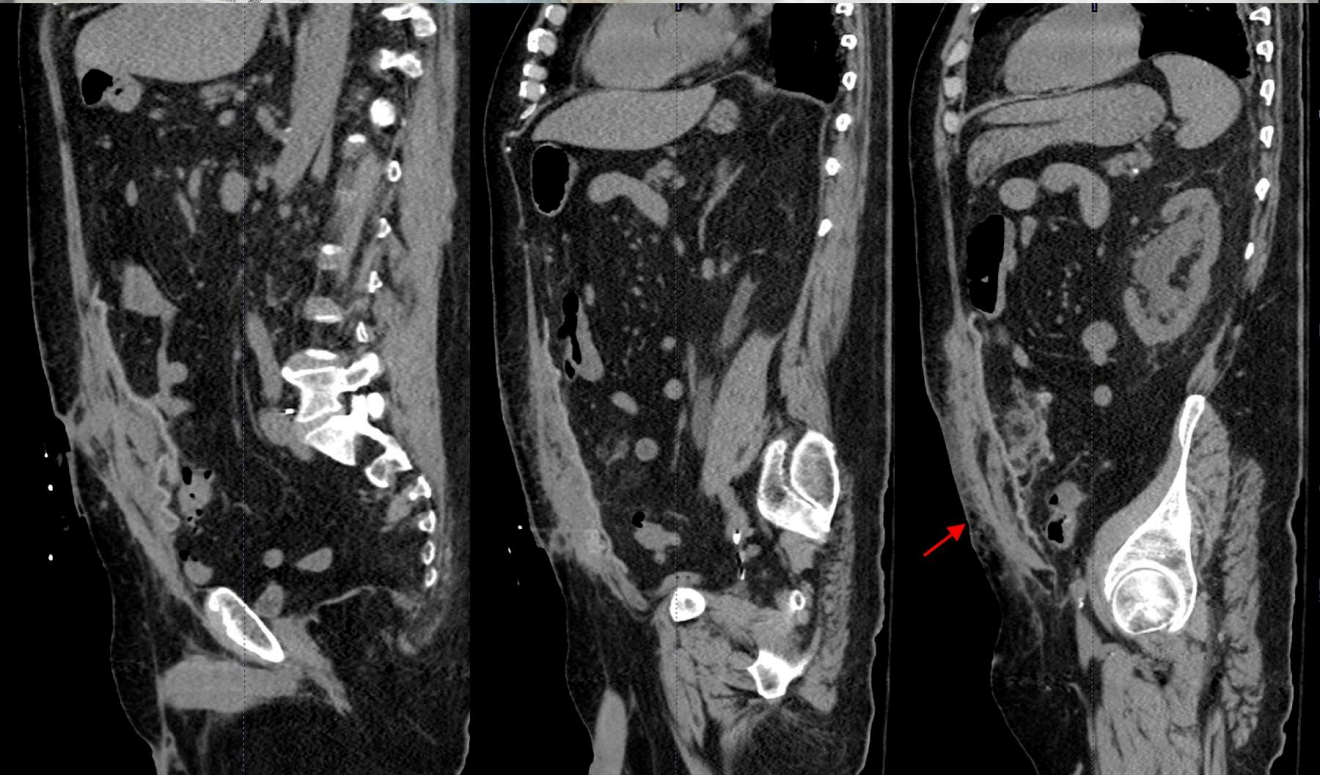
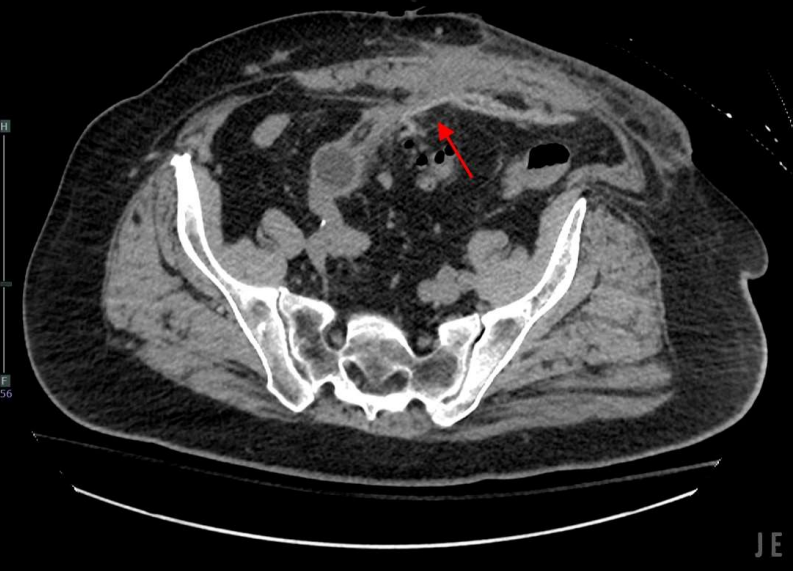
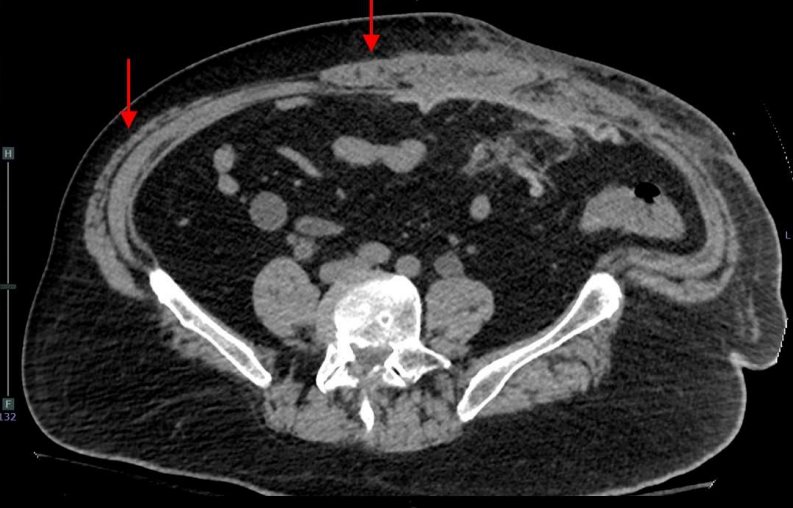
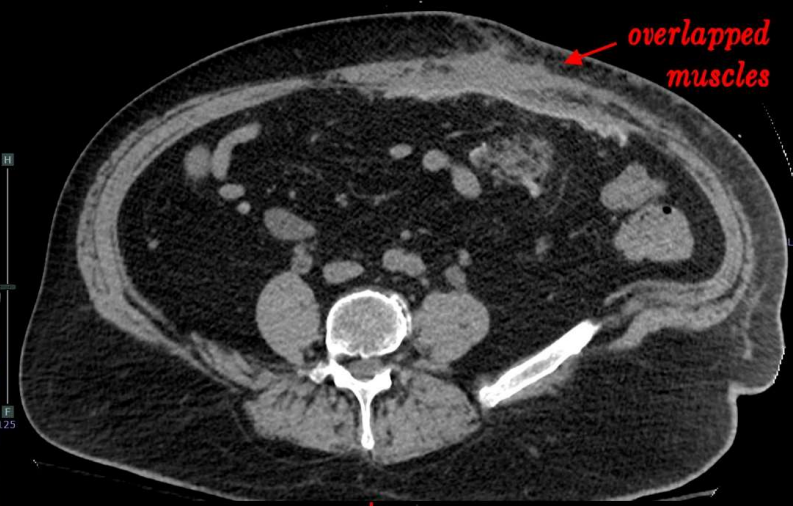
20 months after 3rd operation, (27 months after 2nd op, 35 months after 1st op) ▶

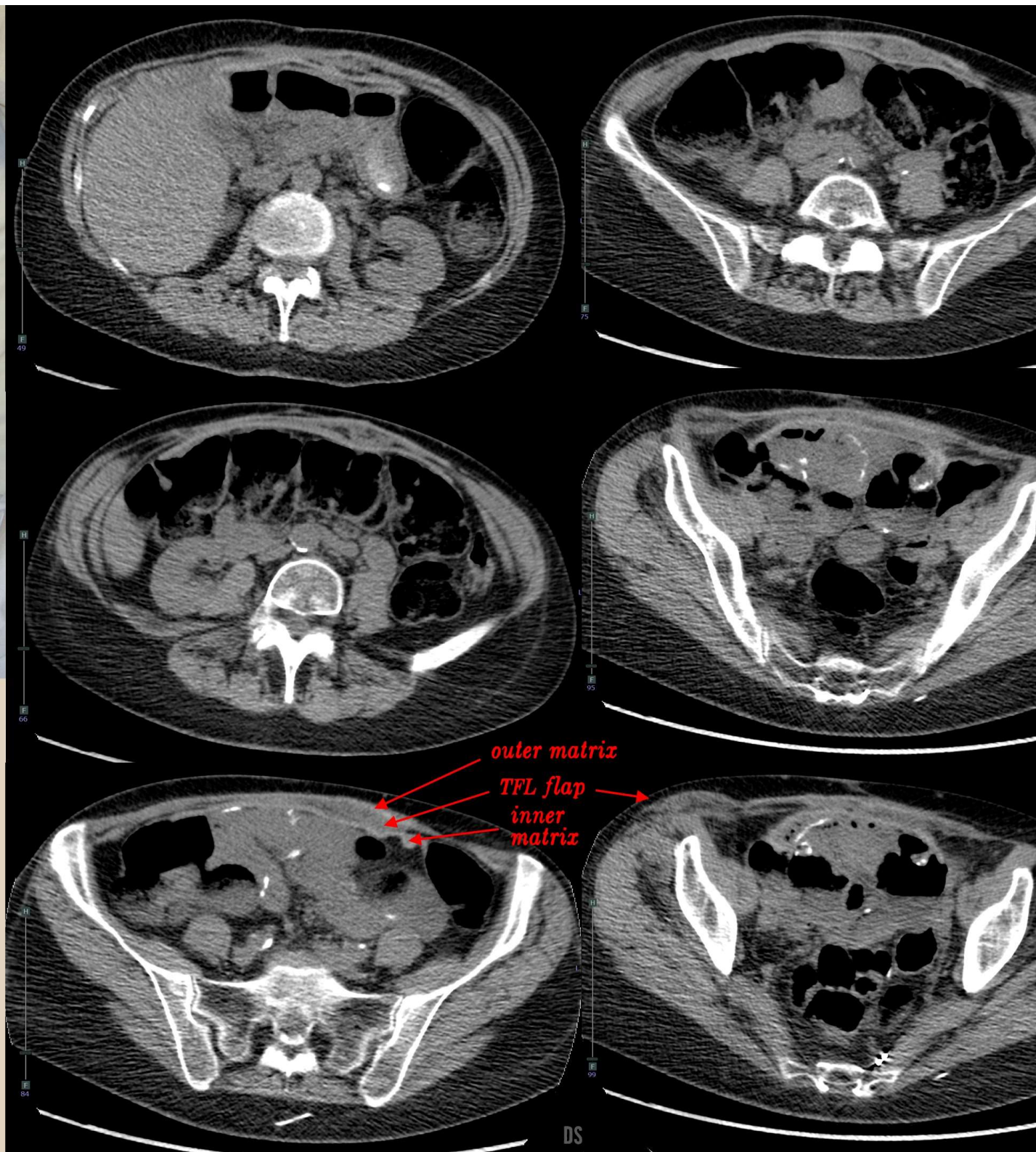




72 m
Ventral hernia ,
multiply recurrent.
Skin ulcers.
After bladder cancer &
multiple surgery &
complications .
Rx
Reduce hernia.
Advance and repair
native elements.
Reinforce with
Surgimend matrix
(bovine dermis).
Excise and close skin.
CT - 1 Pre-op.
CT - 2 (next page) :
6 weeks after repair .
Intact abdominal wall .







73 f

Multiple recurrent ventral hernia, AND
Abdominal wall destruction, loss of fascias.

Multiple failed hernia surgery & meshes.

S/p bowel injury & peritonitis.

Rx

Complex reduce, advance, repair.

Restore fascia with TFL – fascia lata flap.

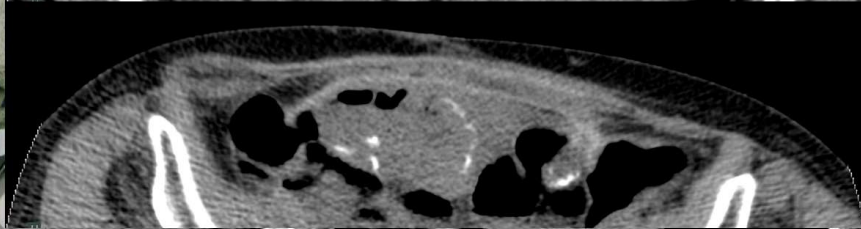
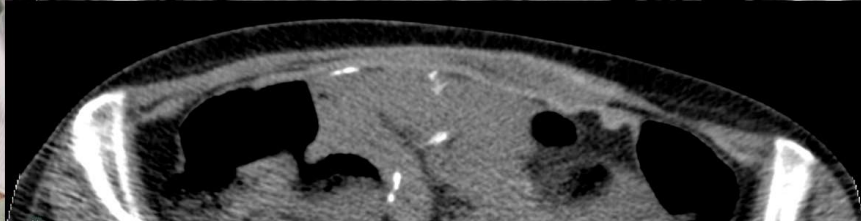
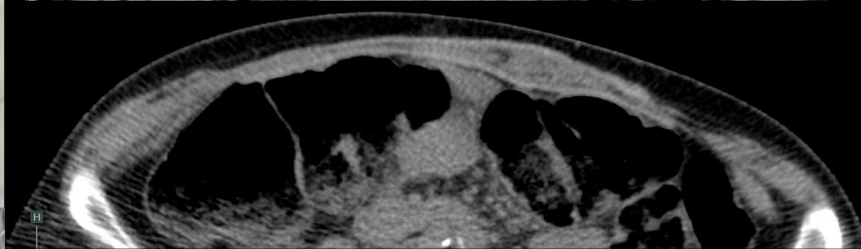
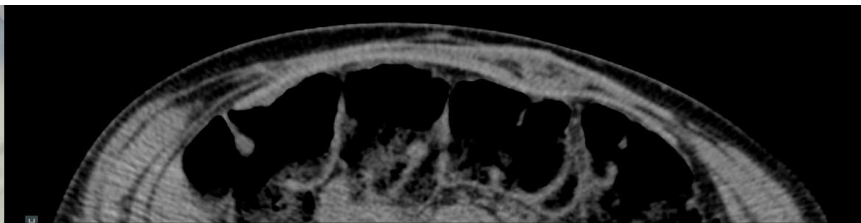
Surgimend (bovine dermis) matrix underlay.

Surgimend (bovine dermis) matrix overlay.

Dermato-fasciectomy of scarred areas.

CT 6 months after repair .

Intact & competent abdominal wall .






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