IFSO 2026

How will AI & Digital Surgery shape Metabolic & Bariatric Surgery?

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DISCLOSURES

Conflict of Interest

Consultant — Boston Scientific

Co-chair, ASMBS Emerging Technologies & Procedures Committee

Declaration — Generative AI used for slide layout

IFSO 2026

Outline — MBS-specific talk

1

The landscape

Who is already using AI, and where does the evidence actually sit?

2

The perioperative pathway

Concrete applications before, during, and after the operation.

3

Ethics & governance

The principles, the risks, and recommendations.

MBS is unusually fertile ground for AI

Data-rich

National registries, longitudinal follow-up, and operative videos

Heterogeneous outcomes

Weight loss and comorbidity resolution vary widely across patients and centres.

Lifelong engagement

Care extends years beyond the operation

PART 1

The Landscape

AI is already being used

75%

have used an LLM at least once

36.6%

use one in daily practice

88.2%

of users rely on ChatGPT

Obesity Surgery (2026) 36:1397–1405
https://doi.org/10.1007/s11695-026-08578-5

IFSO

RESEARCH

Check for updates

IFSO Survey: Use of Large Language Models (LLMs) by Metabolic Bariatric Surgeons and Integrated Health Professionals

Mohammad Kermansaravi[1] · Athanasios Pantelis[2] · Bart Torensma[3,4] · Shahab Shahabi[1] · Manuela Mazzarella[5] · Stefanie D'Arco[6] · Yung Lee[7] · Allan Okrainec[8] · Silvia Leite[9] · Thomas H Shin[10] · Ricardo V Cohen[11]

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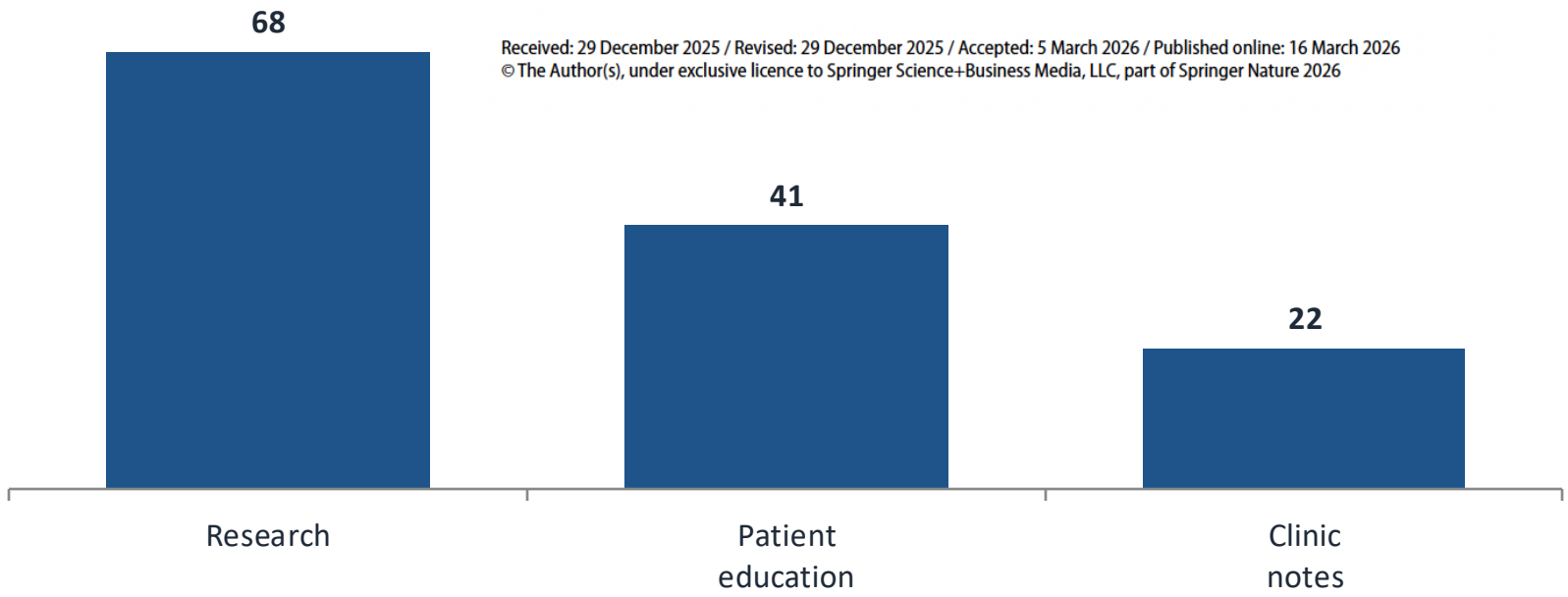
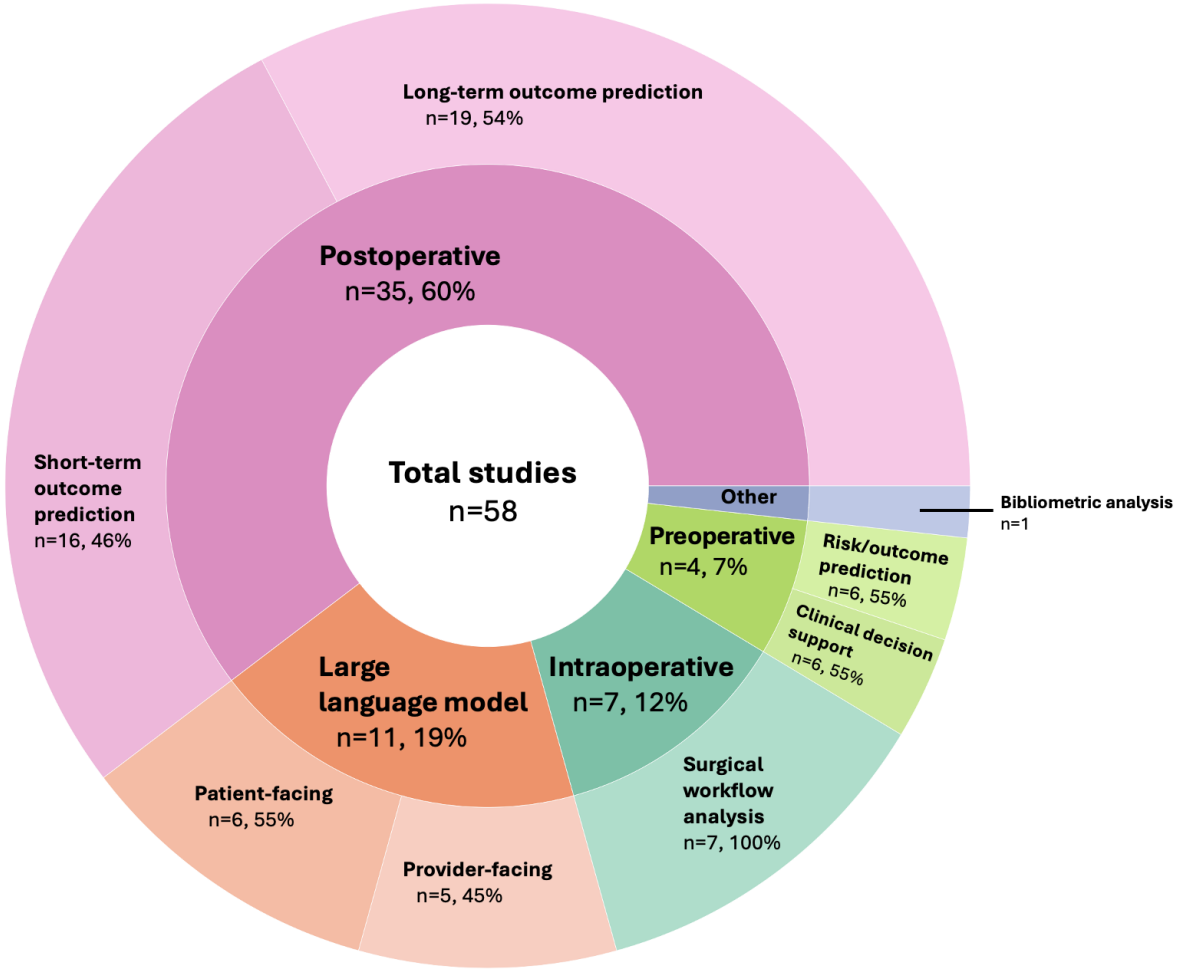


Takeaway: adoption is outpacing guidance.

IFSO Survey — Kermansaravi et al. Obes Surg 2026;36:1397–1405.

Where the published evidence concentrates in 2026



58 studies, mapped to the pathway

Postoperative	60%
Large language models	19%
Intraoperative	12%
Preoperative	7%

Brar, …, Lee. Applications of AI along the perioperative pathway in MBS. Surg Obes Relat Dis 2026.

PART 2

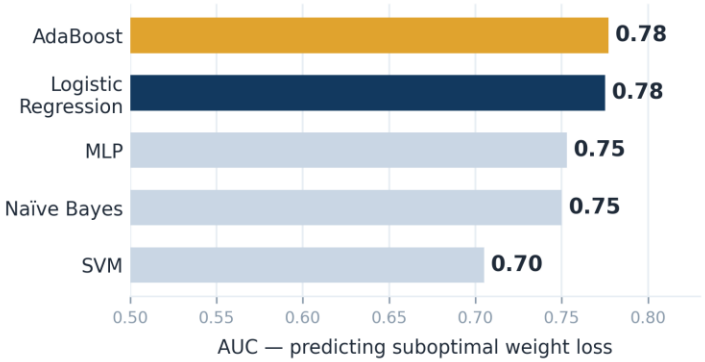
The Perioperative Pathway

Before, during, and after the operation

Sharper selection and forecasting

Risk prediction & selection

ML models on registry-scale data flag high-risk patients earlier and outperform traditional risk scores / indices

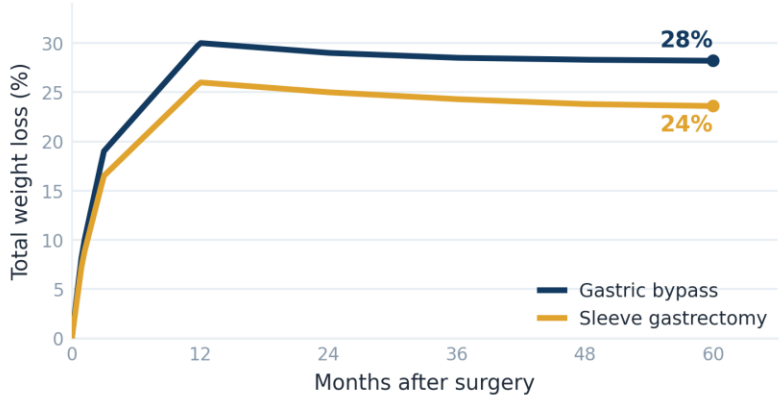


Top predictors: BMI · surgery type · age

Barzin et al., Obesity Surgery 2026 · TOTS registry (n = 3,861)

Outcome forecasting

The SOPHIA calculator predicts an individual 5-year weight-loss trajectory from seven simple preoperative variables.

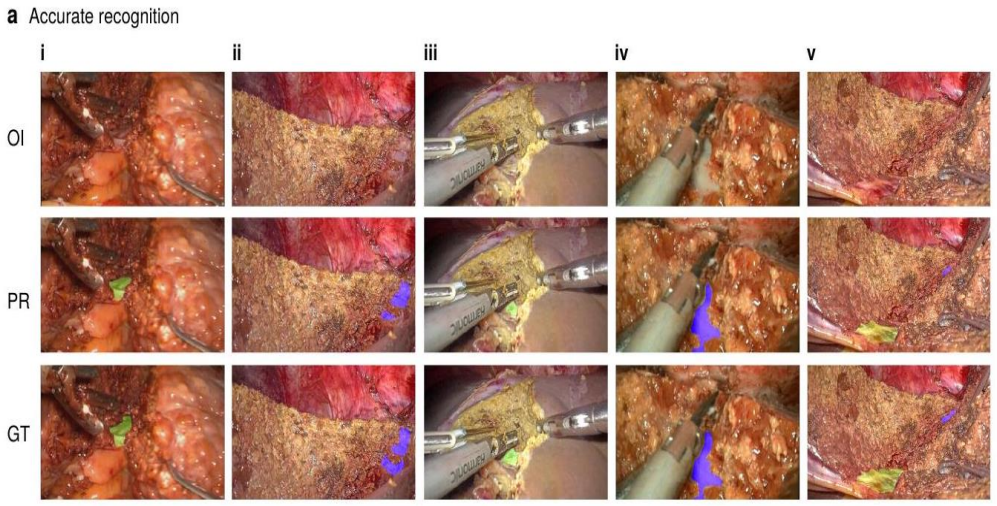


- **Interpretable** — you can see what drives the curve.
- **Sets expectations** — gives the patient a realistic personal target during consent.
- **Validated at scale** — 10,231 patients across 12 international centres.

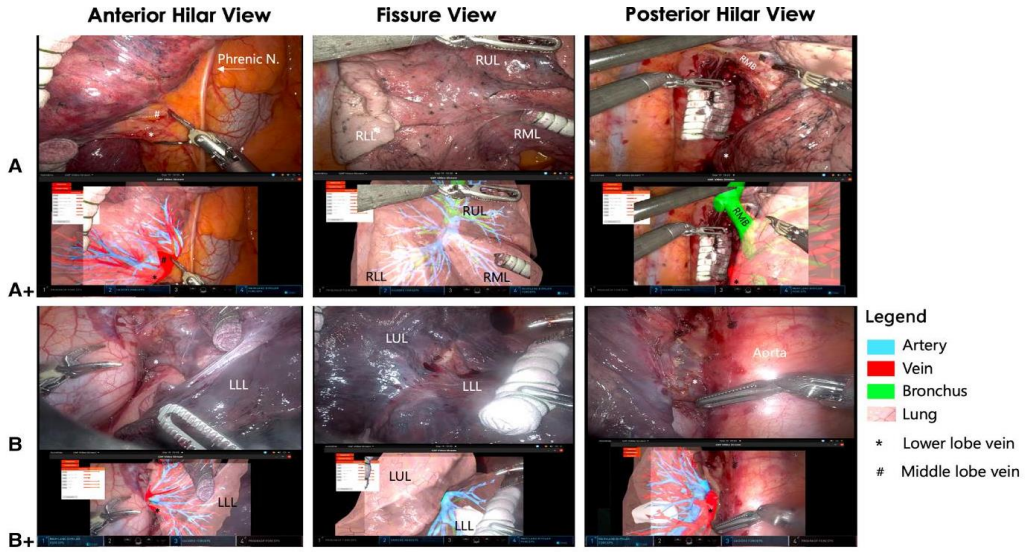
10,231 patients · 12 centres

Saux et al., Lancet Digital Health 2023 · SOPHIA study

Computer vision can see the anatomy in real time

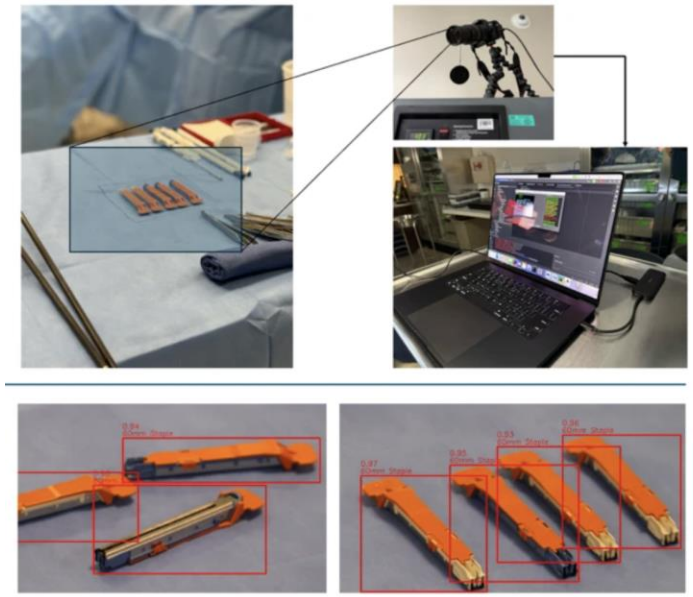


Semantic segmentation of the left pedicle (green) & hepatic vein (blue)
92% / 85% recognition; nnU-Net, multicentre — Tao et al. BJS 2024

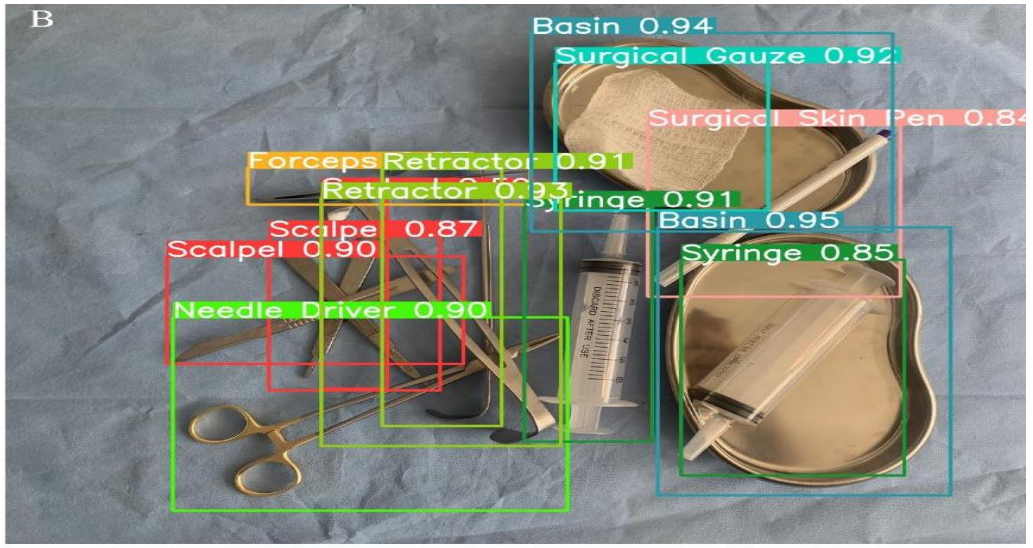


AR overlay of artery, vein & bronchus registered to the live lung
First-in-human AR robotic lobectomy — Sadeghi et al. JTCVS Tech 2024

Computer vision off the field: waste, cost & safety

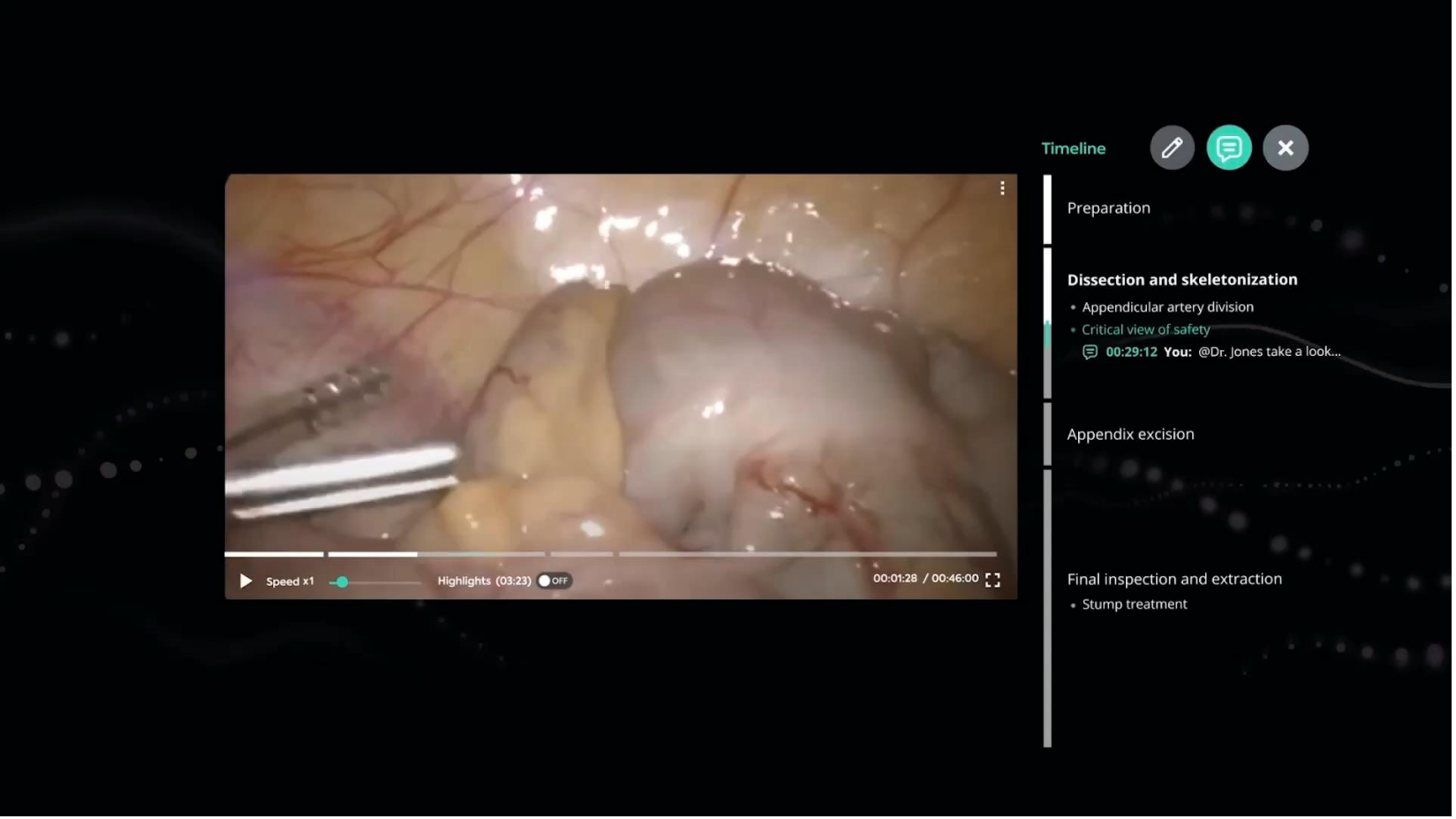


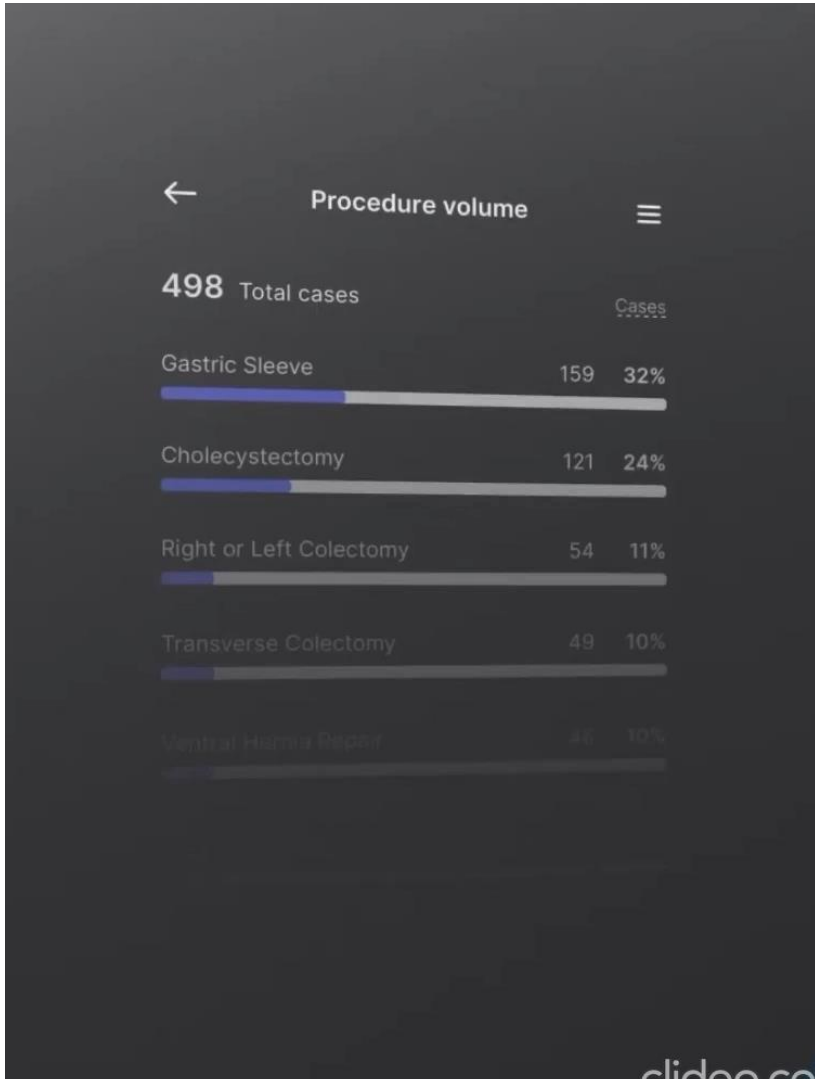
Real-time detection of robotic stapler-load waste



Automated surgical-instrument detection & counting

Sanchez et al. J Robot Surg 2026; Deol et al. Patient Saf Surg 2024


Timeline
Preparation
Dissection and skeletonization
• Appendicular artery division
• Critical view of safety
00:29:12 You: @Dr. Jones take a look...
Appendix excision
Final inspection and extraction
• Stump treatment
Speed x1
Highlights (03:23)
OFF
00:01:28 / 00:46:00


Procedure volume
498 Total cases
Cases
Gastric Sleeve 159 32%
Cholecystectomy 121 24%
Right or Left Colectomy 54 11%
Transverse Colectomy 49 10%

PATHWAY · INTRAOPERATIVE

Autonomous soft-tissue surgery is no longer hypothetical

STAR — Smart Tissue Autonomous Robot performing laparoscopic bowel anastomosis in vivo

83% of sutures placed autonomously on the first attempt

26% suture-spacing variability vs 45% manual / 41% robot-assisted — most consistent

1-wk porcine survival: leak pressure & lumen patency matched surgeons

SCIENCE ROBOTICS | RESEARCH ARTICLE

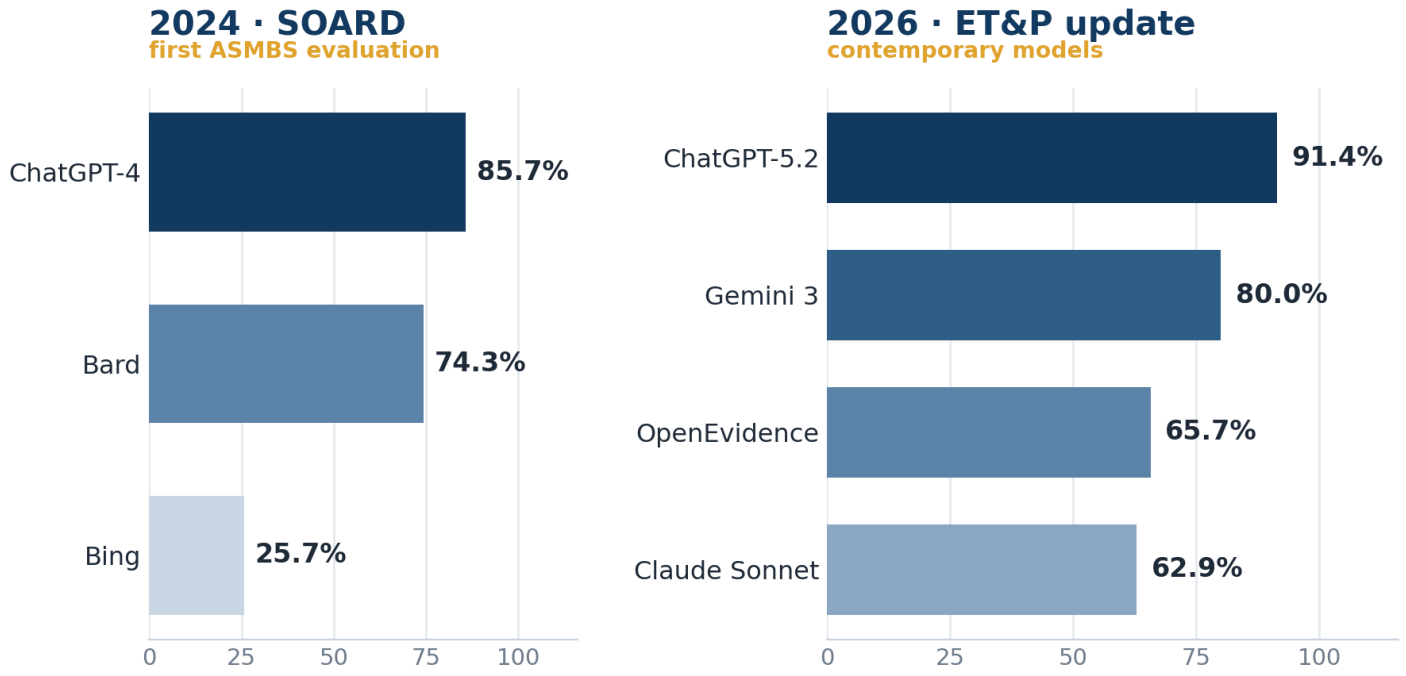
MEDICAL ROBOTS

Autonomous robotic laparoscopic surgery for intestinal anastomosis

H. Saeidi[1,2], J. D. Opfermann[2,3], M. Kam[2,3], S. Wei[3,4], S. Leonard[3], M. H. Hsieh[5], J. U. Kang[3,4], A. Krieger[2,3]*

Saeidi et al. Autonomous robotic laparoscopic surgery for intestinal anastomosis. Sci Robotics 2022;7:eabj2908.

Large language models are improving



Supervised use only

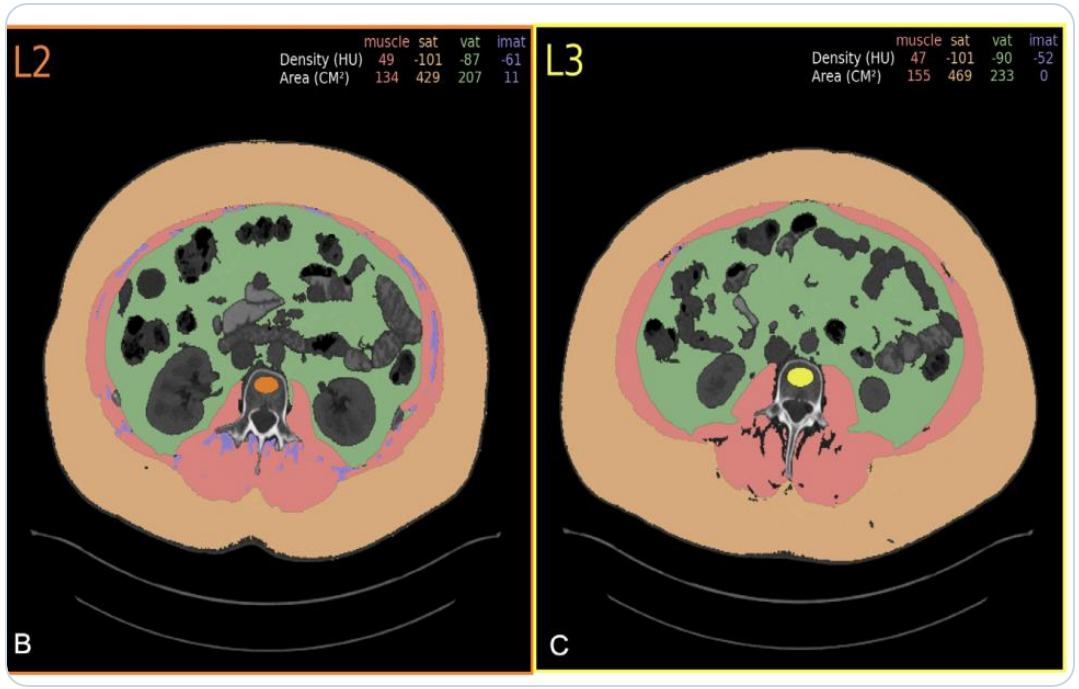
Watch for omission of safety-related information

fluent =/= complete

PATHWAY · POSTOPERATIVE

Beyond BMI: AI enabled CT segmentation

Visceral fat (VAT) = the “metabolically active fat” around the organs vs. standard BMI



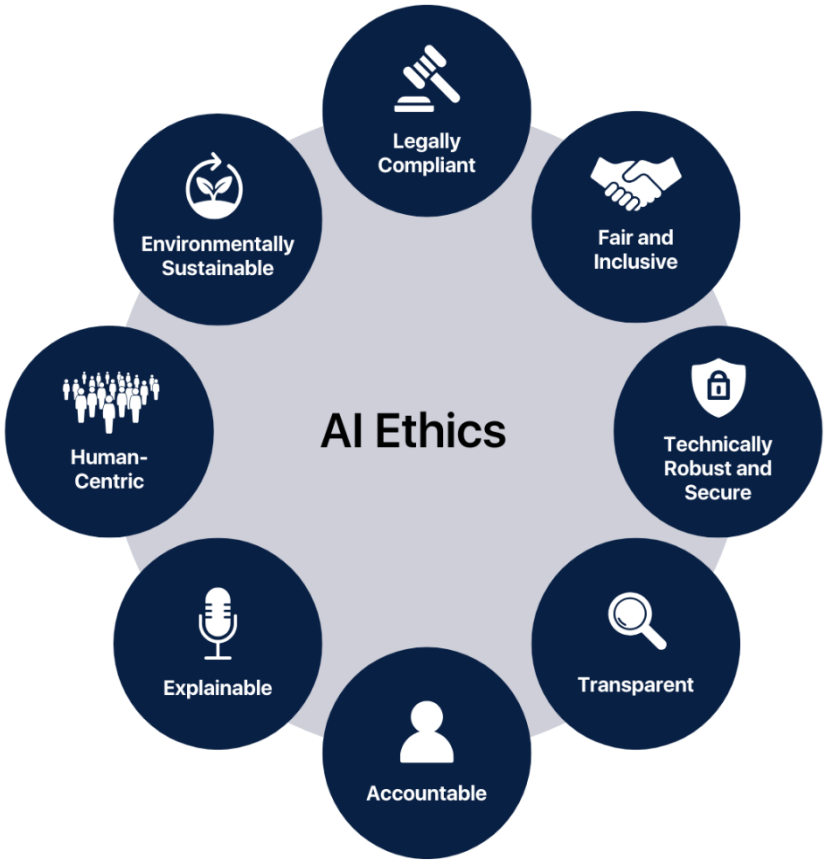
Rabinovich et al., J Am Coll Surg 2026 · Comp2Comp CT body composition after MBS.

PART 3

Ethics & Governance

ETHICS

Risks



- **Hallucinations**
- **Automation bias**
- **Equity**
- **Data & privacy**

ASMBS ET&P Position Statement on Ethics & Regulation of AI in MBS.

Recommendations

Bioethical anchors

Autonomy

AI Inform consent — never override patient choice

Beneficence / Non-maleficence

Validate before trust; guard against false reassurance

Justice

Embed equity across the AI lifecycle

Accountability & Transparency

Provider remains responsible; document AI use

ASMBS recommendations

- **Validate rigorously** — multicentre, transparently reported
- **Mitigate bias** — never a sole gatekeeper for eligibility
- **Disclose** to patients in plain language at consent
- **Comply** — HIPAA, institutional governance, IRB for investigational use
- **Evaluate continuously** — treat AI as an intervention; share outcomes

ASMBS ET&P Position Statement — Position & Recommendations.

AI is an adjunct.

The final decision stays with the practioner.

Specialist led

Rigorously validated

Equitable

Transparent

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PATHWAY · DECISION SUPPORT

From risk score to shared decision

The MBSAQIP calculator: the model surgeons already trust

- Registry-based, individualized estimates of risk and comorbidity resolution
- Its role is to inform the consent conversation, not to gatekeep eligibility
- Denying surgery on an algorithm alone ignores the psychosocial and value-based factors models cannot see

Epic Cosmos

Behind the scenes

57%

of physicians rank administrative automation as AI's single most valuable use

ASMBS ET&P White Paper — Risk Stratification, Counseling & Administrative Applications.

PATHWAY · TRAINING

VR related training

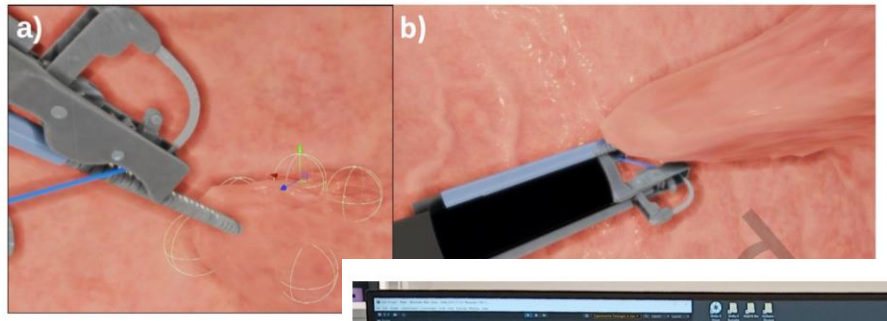
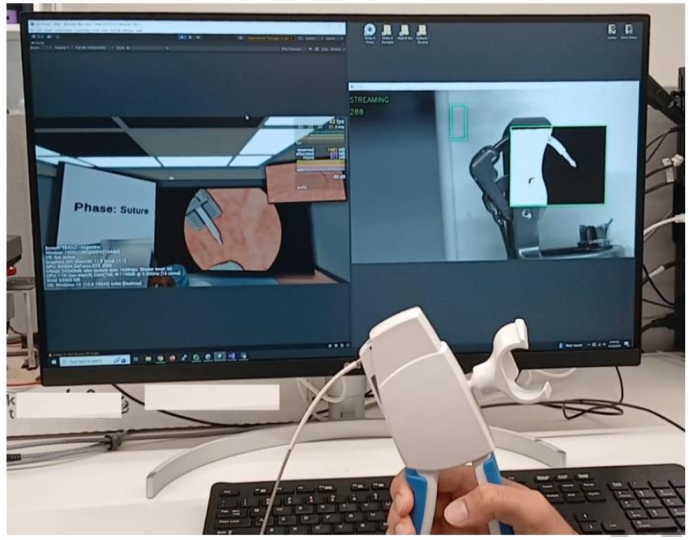


Fig. 5. a) Interaction between Particles' (



ViBE — real-time soft-body stomach in a haptic VR endoscopic-sleeve-gastroplasty simulator

Purpose-built for ESG

APC marking, endoscopic suturing & tissue-pulling with soft-body (XPBD) physics and bleeding.

Objective, repeatable

Motion economy, error rate & completion time — the metrics AI-scored skills assessment plugs into.

Real-time & tactile

55 FPS · <75 ms end-to-end latency · 1000 Hz haptic feedback loop.

Erden et al. Real-Time Virtual Bariatric Endoscopic Simulator with Haptic Feedback. ACM Trans Sensor Netw 2025.