Supplementary Information

Supplementary Table 1. Comparison of patient experience and safety between MIS and traditional surgery

Dimension	Minimally invasive surgery	Traditional open surgery	Clinical significance	References
Recovery and safety	Video-Assisted Thoracoscopic Surgery (VATS) results in less pain, fewer complications, shorter hospital stays, and better quality of life postoperatively	Thoracotomy is associated with more pain, more complications, longer hospital stays, and poorer quality of life postoperatively	Minimally invasive surgery improves recovery and safety, offering cost-effectiveness	[1]
Recovery and quality of life	Laparoscopic hemihepatectomy offers faster recovery and better quality of life	Open hemihepatectomy leads to slower recovery and lower quality of life	Minimally invasive hemihepatectomy improves recovery and facilitates adjuvant therapy	[2]
Pain and quality of life	Post-VATS pain is lighter, and quality of life is better	Post-thoracotomy pain is more severe, and quality of life is poorer	Minimally invasive surgery reduces pain and improves patient experience	[3]
Recovery and safety	Faster physical recovery and lower complication rates 5 weeks after VATS	Slower recovery and higher rates of severe complications after thoracotomy	Minimally invasive surgery promotes early recovery and safety	[4]
Quality of life and cost	Laparoscopic surgery offers higher Quality-Adjusted Life Years (QALYs) and lower costs	Open surgery results in lower QALYs and higher costs	Minimally invasive surgery improves quality of life and provides significant cost-effectiveness	[5]
Complication occurrence	Laparoscopic surgery has a 30-day complication rate of 27%	Open surgery has a 30-day complication rate of 42%	Minimally invasive surgery offers an acceptable safety advantage	[6]
Quality of life	Laparoscopic surgery results in faster Health-Related Quality of Life (HRQoL) recovery with fewer dimensions	Open surgery results in more significant HRQoL decline and slower recovery	Minimally invasive liver resection improves postoperative quality of life	[7]
Complications and recovery	Thoracoscopic surgery has lower complications, faster recovery, and better quality of life	Open surgery has higher complications, slower recovery, and poorer quality of life	Minimally invasive rib surgery enhances patient experience and safety	[8]
Conversion rate and recovery	Transanal Total Mesorectal Excision (Ta-TME) has a lower conversion to open surgery rate and faster recovery	L-Leucine Antagonist Resistant (L-LAR) has a higher conversion to open surgery rate and slower recovery	Ta-TME improves surgical safety and recovery	[9]
Complications and quality of life	Minimally invasive clipping has better cosmetic outcomes, higher satisfaction, and less temporal atrophy	Wing-point clipping has a 10% facial nerve paralysis rate and poorer quality of life	Minimally invasive clipping improves safety and patient experience	[10]
Immunity and quality of life	VATS has less bleeding, lighter immunosuppression, and better quality of life	Thoracic Outlet Syndrome (TOS) has more bleeding, heavier immunosuppression, and lower quality of life	Minimally invasive lobectomy improves recovery and patient experience	[11]
Pain and recovery	Endovenous Laser Ablation (EVLA)/ Ultrasound-Guided Foam Sclerotherapy (UGFS) results in less pain, faster recovery, and shorter time off work	Open surgery results in more pain, slower recovery, and longer time off work	Minimally invasive methods improve experience and shorten recovery time	[12]
Pain and healing	Sinus tract curettage combined with PRP results in less pain, faster healing, and improved quality of life	Open excision surgery results in more pain, slower healing, and poorer quality of life	Minimally invasive curettage with PRP optimizes recovery and reduces patient burden	[13]
Surgery and recovery time	UGFS+Great Saphenous Vein (GSV) high ligation: 38.3 minutes, recovery in 5.4 days	GSV stripping + multiple point avulsion/TIPP: 81.2 minutes, recovery in 9.6 days	Minimally invasive techniques significantly shorten procedure time and accelerate recovery	[14]
Experience and safety	Laparoscopic surgery results in less pain, higher satisfaction, and fewer side effects	Open surgery results in more pain, lower satisfaction, and more side effects	Minimally invasive techniques optimize experience and improve safety	[15]

Note: Abbreviations: VATS, Video-Assisted Thoracoscopic Surgery; QALYs, Quality-Adjusted Life Years; HRQoL, Health-Related Quality of Life; Ta-TME, Transanal Total Mesorectal Excision; L-LAR, L-Leucine Antagonist Resistant; TOS, Thoracic Outlet Syndrome; EVLA, Endovenous Laser Ablation; UGFS, Ultrasound-Guided Foam Sclerotherapy; GSV, Great Saphenous Vein.

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