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COMMENTARY

Futility in hepatopancreatobiliary surgery: Time to incorporate the patient's voice

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Abstract

Surgical futility in hepatopancreatobiliary (HPB) oncology is often defined by clinical outcomes — mortality, major morbidity, or early recurrence — yet these metrics overlook the patient's lived experience and goals. This commentary argues that futility must be reframed from a purely technical judgement to a relational construct integrating patient-defined values. We review recent multicentre studies which refine predictive models across HPB malignancies, but remain rooted in clinician-centric paradigms. We propose a holistic framework that (i) documents goal-concordant decisions through structured shared decision-making; (ii) embeds patient-reported outcome measures alongside clinical endpoints; and (iii) uses predictive models as decision aids rather than arbiters. By coupling quantitative estimates with qualitative patient goals, futility is transformed into an ethically grounded, patient-centred endpoint that aligns surgical intent with what truly matters to the patient.

Keywords: *Surgical futility, hepatopancreatobiliary oncology, shared decision-making, holistic care*

Introduction

In 1750, the anatomist John Hunter colourfully described surgery as a "humiliating spectacle of the futility of science". His observation, though centuries old, foreshadows the modern difficulty of deciding when surgical intervention, despite technical sophistication, no longer aligns with meaningful benefit. Historically, important decisions were grounded in medical paternalism — the belief that the surgeon alone should determine what was best for the patient. As surgery evolves, so has the ethical landscape — contemporary practice now demands that key medical decisions be made while balancing clinical judgement with patient autonomy and fairness. However, traces of this paternalistic tradition persist, often influencing how surgeons interpret risk, frame treatment options, or define what constitutes a beneficial operation. Acknowledging this historical continuity is crucial, as it underscores why modern deliberations on futility must foreground patient-centricity.

Surgical futility remains one of the most complex and contested concepts in contemporary oncology. In hepatopancreatobiliary (HPB) surgery, the notion of "futility" is typically defined through clinical or oncological outcomes such as postoperative mortality, major morbidity, or early cancer recurrence. Recent large-scale multicentre studies have sought to refine preoperative predictive models for futility across diverse HPB pathologies such as perihilar cholangiocarcinoma (a common bile duct cancer), pancreatic ductal adenocarcinoma (PDAC), hepatocellular carcinoma (HCC), and gallbladder cancer (GBC), as well as their surgical procedures such as pancreaticoduodenectomy [1-6].

While these efforts represent significant progress in optimising surgical decision-making, they are framed predominantly through the surgeon's lens, emphasising disease, biology, and surgical-determinant factors, with little attention to the patient's viewpoint. The discourse seldom centres the patient's values, wishes, and goals, which often extend beyond survival timelines or radiographic endpoints. This commentary argues that a holistic understanding of futility in HPB surgery must integrate not only oncologic and surgical predictors, but also the voices of patients and their families.

Current literature

Table 1 shows various definitions of futility in HPB surgery. These definitions vary widely across organ systems.

For perihilar cholangiocarcinoma, Ratti et al analysed 2,271 patients across 27 centres, reporting that 13.6% experienced futile surgery, defined as either severe postoperative complications or recurrence within 12 months [1]. In PDAC, Crippa et al introduced the MetroPancreas model, defining futility as death or recurrence within six months, with nearly one in five patients meeting this endpoint [2]. Similarly, Altaf et al studied HCC in 1,633 patients, identifying a 16.2% futility rate using a six-month definition based on death or recurrence [3].

In contrast, national database analyses of pancreaticoduodenectomy (PD) patients adopted a broader one-year timeframe. Marcinak et al reported that 25.3% of 66,326 PD cases were futile, defined as death within 12 months [4], a finding corroborated by Ahmed et al in a machine learning analysis of the same dataset [5]. Finally, for GBC, Serenari et al employed a stricter composite definition — recurrence within five months or death within 90 days, identifying 13.6% as futile resections [6].

Despite methodological advances and varied thresholds, a common theme emerges: futility is consistently defined by adverse outcomes measurable on a population level — mortality, early recurrence, or severe complications — while remaining silent on the patient's lived perspective.

Table 1. Definitions of futility in recent multicenter hepatopancreatobiliary (HPB) surgery studies

Cancer type	Study/Year	Cohort size	Definition of futility	Incidence (%)
Perihilar cholangiocarcinoma (PHC) [1]	Ratti et al., *Hepatology* 2024	2,271	Severe postoperative complications (Clavien-Dindo ≥ III) **or** recurrence within 12 months	13.6
Pancreatic ductal adenocarcinoma (PDAC) [2]	Crippa et al., *JAMA Surg* 2024	1,426	Death or recurrence within 6 months after upfront pancreatectomy	18.9
Hepatocellular carcinoma (HCC) [3]	Altaf et al., *EJSO* 2025	1,633	Death or recurrence within 6 months after liver resection	16.2
Pancreatico-duodenectomy (PD) [4]	Marcinak et al., *J Surg Oncol* 2024	66,326	Death within 12 months of diagnosis despite PD	25.3
PDAC – Machine learning approach [5]	Ahmed et al., *J Surg Res* 2025	66,331	Death within 12 months of diagnosis despite PD	25.3
Gallbladder cancer (GBC) [6]	Serenari et al., *Ann Surg Oncol* 2025	788	Recurrence within 5 months **or** death within 90 days of surgery	13.6

The missing dimension: patient-centred futility

From an ethical standpoint, prevailing definitions of futility embody a paternalistic orientation. They assume that futility can be determined solely by clinical endpoint. While such constructs are useful for benchmarking outcomes and allocating resources, they omit the patient's subjective experiences, values, and goals.

It may be argued that beneficence and non-maleficence already require clinicians to act in the patient's best interests, thereby rendering explicit appeals to autonomy unnecessary. Though these principles often align with what many patients value, it is contingent, not guaranteed. Beneficence and non-maleficence are professional duties assessed largely through population-level evidence and clinicians' judgements of risk and benefit. Autonomy, by contrast, is a person's claim-right, grounded in individual values and life plans. A plan can be "beneficent" in a probabilistic, clinical sense, yet still be incompatible with patient autonomy if it fails to elicit, prioritise, and operationalise the patient's own ends. Consider a patient undergoing PD who dies 11 months after surgery: such a case might be classified as "futile"; yet if that year enabled the patient to attend a child's graduation, reconcile relationships, or achieve personally meaningful milestones, can the surgery truly be deemed futile? Conversely, another patient who survives 18 months but remains bedridden and dependent for activities of daily living, due to severe perioperative morbidity, may not regard the outcome as worthwhile. This illustrates the subtle yet significant difference between a clinician who prioritises the patient's quality of life rather than their length of survival.

In this light, beneficence and non-maleficence tell us what generally helps patients, whereas autonomy tells us whether this patient wants that help. A patient-centred concept of futility emerges when we begin to treat autonomy as an ethical principle of equal weight, rather than a subordinate one.

Futility as relational, not objective

Having clarified who holds moral authority — the patient, not solely the clinician — we now turn to how futility is assessed. Scholars have long distinguished:

1. Quantitative futility: probabilistic failure to achieve a physiological or oncologic effect.
2. Qualitative futility: failure to achieve outcomes the patient finds worthwhile.

HPB surgery has tended to privilege quantitative thresholds — for example, perioperative death within six months or recurrence within 12 months. Such cut-offs help benchmark outcomes and inform policy but, standing alone, they reveal only that a survival curve shifts; they do not show whether that shift serves this patient's aims. By contrast, qualitative assessments translate articulated goals into auditable indicators.

In our view, futility is relational: it emerges from dialogue that connects (i) transparent quantitative estimates with (ii) patient-defined qualitative endpoints and then tests concordance between them. These contrasts are best understood through real-world scenarios that illustrate how

numerical survival thresholds and patient-valued outcomes may diverge. For example, a patient with PDAC may rationally trade a small reduction in median survival for more time at home or preserved mental activity. Conversely, a high-risk operation might be valuable to the patient if it plausibly enables a time-sensitive milestone the patient prizes.

Put differently, the autonomy debate clarifies who decides; the quantitative/qualitative debate clarifies what counts as success. Relational futility requires aligning both.

Toward a holistic framework

The preceding sections clarified who holds moral authority in futility debates and what kinds of endpoints matter. In order to create a richer model of futility in HPB surgery, we propose three steps that convert principle into practice (Figure 1, available online only). Ethical decision-making in practice is rarely linear. Patients and families may diverge in their goals of care; clinicians may face time pressures, resource constraints, or fragmented information; and surgeons' own experiences and intuitions can subtly influence how options are framed. These challenges do not invalidate a structured approach — rather, they underscore its necessity. The three steps below are deliberately designed to reveal disagreements early on, create transparent reasoning, and minimise the influence of unexamined biases.

1) Document goal-concordant decisions with a structured note.

Use a brief shared-decision-making (SDM) script built on choice, option, and decision to ensure that patients know reasonable options exist, understand their harms/benefits, and are supported to form informed preferences [7]. Document (a) the patient's top goals, (b) unacceptable outcomes, and (c) time-bound goal-attainment indicators in a goal-concordance checklist within the consent note. Incorporate decision support tools and a short teach-back to check understanding and allow deliberation to occur across encounters and with family ("distributed" deliberation). This creates an auditable anchor for peri-operative reviews and aligns bedside practice with an SDM model shown to improve knowledge, involvement, and confidence in choices.

2) Embed a core patient-reported outcome measure (PROM) set and report it alongside clinical endpoints.

Move beyond solely clinical outcomes such as complications/recurrence, by adding Patient-Reported Outcome Measures (PROMs) validated for HPB contexts (eg, the FACT-HEP questionnaire) and pragmatic metrics such as days at home within 90 days, return to valued role by three months, dependency status at 90/180 days, and decisional regret at three months. Where trials under-report quality-of-life (QoL) domains, institutional audits can fill the gap by co-reporting these as standard secondary outcomes. In a review of 43 liver and gastrointestinal cancer randomised controlled trials, Winkelmann et al report that QoL/PROMs are still underused and when included, most often appear as secondary outcomes [8]. For pancreatic cancer, Maharaj et al advocate multidimensional PROMs and emphasise gaps such as limited pancreatic-cancer-specific validation, and high rates of incomplete questionnaires by 12 months [9]. However, while PROMs add the patient's voice, they have their limitations too. PROMs may not capture subtle cultural differences, and may disadvantage patients with lower literacy, displaying the level of ethical complexity behind utilising such tools.

3) Use predictive models as decision aids, not decision arbiters.

Risk tools should frame probabilities and timing, but must not predetermine choices. Surgical judgement ought to interpret model outputs through the recorded goals and stop-rules, taking into account the narratives of patients and their families: if goal-attainment is implausible at acceptable risk, designate the plan clinically effective but goal-ineffective (patient-centred futility); if a time-sensitive milestone is credibly enabled, proceed with time-limited trials and predefined exit criteria. Furthermore, clinicians should err on the side of caution when employing such tools — recognising the possibility of over-reliance on numbers, and potential conflict when a model's prediction is not aligned with the patient's personal values or beliefs. Ethically, this stance resists automation bias and preserves epistemic humility: models speak in averages, whereas consent concerns the singular patient whose values set the decisional threshold. It also advances transparency and fairness by making the rationale traceable — what the model estimated, how that estimate was weighed against the patient's goals, and why the final decision followed.

Figure 1 (available online only) synthesises these components visually. The apex of the triangle represents the structured note, where discussion rooted in choice, option, and decision culminate in documented goals, stop-rules, and time-bound milestones. The left side depicts patient-reported outcomes, underscoring that what matters most must be measured: days at home, emotional wellness, role resumption, quality-of-life trajectories, and decisional regret. The right side illustrates predictive models as aids — not arbiters — supporting personalised risk visualisation, mapping thresholds to goals, and establishing time-limited trials with predefined go/no-go checkpoints while guarding against automation bias. Together, the three sides reflect a solid clinician–patient partnership in which probabilities are interpreted through preferences and ethical deliberation remains transparent.

Although the framework is grounded in widely accepted ethical principles, its practical expression will vary across cultural and resource contexts. In settings where family-centred or relational forms of autonomy predominate, goal elicitation may necessarily involve collective deliberation. Similarly, lower-resource environments may rely on shorter

PROM instruments or simplified decision notes while still upholding the core intent of transparency and patient-valued outcomes. The framework is therefore adaptable: its structure remains stable, but the manner of implementing each component can be tailored to local norms and capacities.

Limitations

As mentioned above, while these three steps offer a structured framework towards approaching a new definition of futility, we understand that ethics in practice is rarely straightforward. Clinicians are bound to face challenges and constraints while applying this framework to real-world practice. For example, families may disagree with the patient's expressed goals, particularly near the end of life. Limited time, personnel or institutional resources can impede meaningful shared conversations. Furthermore, surgeons themselves can also unintentionally sway a patient's decision — with their own values or opinions subconsciously influencing how different options are presented.

Recognising and addressing these complications grounds our framework in realism rather than idealism — making it integral to ethical practice, not evidence of its failure. These challenges can be mitigated by skilled mediation and clear documentation of the patient's voice throughout their care, coupled with consistent and structured family conferences supported by palliative care for resolution of conflicts. To streamline time-sensitive discussions, SDM prompts and checklists can be integrated into electronic health records to improve the overall workflow. Finally, to make any implicit biases visible, institutions can incorporate brief reflective or peer-review mechanisms, such as case debriefs or multidisciplinary team meetings.

With this three-step framework supported with pragmatic institutional practices, we propose that futility be reframed as a contextual endpoint — combining oncologic benefit with patient-defined goals. Only through such a multidimensional lens can the field move from a paternalistic to a truly holistic definition of futility in HPB surgery.

Conclusion

Multicentre HPB studies have strengthened prediction of "futility" with disease, biology, and operative factors, but risk fixing it as a technical label detached from lived experience. A credible measure must not only ask if recurrence occurred within six months; but should also assess whether the patient's goals were honoured and dignity was preserved. Integrating the patient's perspectives into predictive frameworks is not an ethical add-on against paternalism, it is the essential ingredient of a holistic surgical care.

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