



## Supplementary File 1: Data Extraction

Author (Year)	Setting/ Design	Sample Size	Age/Gender/ Severity	Hemorrhage Control Interventions (Type & Sequence)	Outcomes Measured	Key Study Limitations	Main Conclusions
Anand (2022) [1]	US, Retrospective, multicenter (ACS TQIP)	Not stated	≥18 yr, not specified/M:62%/ Severe pelvic fx in shock	PPP, AE, REBOA (used alone or in combinations; sequencing analyzed)	Mortality (primary), complications, 24h PRBC transfusion	Retrospective, database design; adult only; no inherited coagulopathy subgroup analysis	Patterns of hemorrhage control strategy show varying associations with mortality, transfusion volume, and complications.
Martinez (2023) [2]	Systematic review & meta-analysis (8 studies)	N=2040 pooled	Adults (multi-study), characteristics variably reported	Comparison of PPP vs AE as initial intervention	24h PRBC transfusion, in-hospital mortality, DVT	Included only studies reporting relevant outcomes, pooled retrospective data, heterogeneity, no RCTs	PPP had fewer 24h PRBC transfusions; no mortality differences vs AE.
Duchesne (2019) [3]	US, Multicenter, retrospective (12 trauma centers)	N=279	Median 40 yr (IQR 28-54), M:62%, ISS 38 (IQR 29-50)	Mechanical stabilization, PPP, AE; timing and sequence assessed	Time to control, in-hospital mortality, transfusion, ICU/hospital length of stay	Retrospective, multicenter, not controlled, no coagulopathy stratification	Comparative outcomes and time to bleeding control described; sequence impacts outcomes.
Mauffrey (2014) [4]	Literature review; international	N/A	N/A	Overview; external fixation, PPP, AE, resuscitation protocols	Survival, coagulopathy progression, strategies	Narrative review, no pooling/ quantitative meta-analysis	Early stabilization/ mechanical control and balanced transfusion are best practice.
Cullinane (2011) [5]	EAST systematic review/ guideline	50 studies (incl.)	Adult, subset pediatric (not stratified)	External fixation, AE, packing (not always preperitoneal), transfusion protocols	In-hospital mortality, transfusion, complications	Systematic review (Level II/III), non-randomized, general trauma cohorts	Early stabilization and angiography selectively recommended; protocol-based care improves outcomes.

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(Franchini, 2008) [6]	Review of studies on VWD surgical prophylaxis, focusing on VWF/FVIII concentrates (e.g., Haemate P).	Varied (e.g., 29–437 patients across studies).	VWD patients (types 1, 2, 3); mixed age/ gender.	<b>Short-term prophylaxis:</b> VWF/FVIII concentrates (e.g., Haemate P) or DDAVP. <b>Dosing:</b> Tailored via pharmacokinetics (e.g., 60 IU/kg loading, 40 IU/kg maintenance).	Efficacy: 91–100% excellent/good hemorrhage control. Safety: Thrombosis risk if FVIII >150 IU/dL (monitoring advised).	Heterogeneous studies; retrospective data; small samples for some analyses.	VWF/FVIII concentrates (especially Haemate P) are safe/effective for surgery. Pharmacokinetic-guided dosing and FVIII monitoring reduce thrombosis risk.
Gong (2023) [7]	Korea, Single-center, retrospective	N=65	Mean 59.2 yr, 61% M, SBP 80–100 mmHg after resuscitation	PPP vs AE after initial stabilization (with/without REBOA)	ED to procedure time, MV duration, complications, mortality	Single-center, small cohort, non-randomized; differences in baseline status between groups	PPP group had quicker intervention, shorter ventilation, similar complications/ mortality vs AE.
Dabetic et al. (2025) [8]	Narrative synthesis of peer-reviewed literature (2009–2024)	N/A (Review article; analyzes multiple studies)	Polytrauma patients with pelvic fractures (mixed demographics/ severity)	Discusses: - External fixation - Pre-peritoneal packing - Angiographic embolization - Hybrid approaches	Comparative analysis of: - Mortality - Functional recovery - Complications (infection, malunion, etc.) - Surgical timing (DCO vs. ETC)	1. Heterogeneity of included studies 2. Lack of large-scale RCTs 3. Limited long-term outcome data for hybrid techniques	This comprehensive review concludes that pelvic fracture management in polytrauma patients requires individualized strategies, favoring damage control orthopedics (DCO) for unstable patients and early total care (ETC) for stable cases, while hybrid surgical techniques and AI-driven approaches show promise for optimizing outcomes, though further research is needed to standardize protocols.

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Li (2020) [9]	Meta-analysis (10 studies)	N=560 (pooled)	Adults; demographics not detailed	Protocols including PP vs no PP compared	Overall and 24h mortality, transfusion requirements, length of stay	Heterogeneous protocols, only studies comparing PP/ no PP, variable reporting	PP associated with reduced mortality (esp. 24h), less transfusion.
Cothren (2007) [10]	US, Single-center, consecutive case series	N=28	Mean 40 yr, 68% M, severe injury	PPP with external fixation (protocol)	Mortality, transfusion volume, time to hemostasis	Small, single-center, historical comparison	PPP shows rapid control in severe pelvic fracture; supports paradigm shift toward early surgical packing.

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