

Embolization of Spontaneous Retroperitoneal Hemorrhage: An Individualized Approach is Needed

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We read with great interest the manuscript by Lukies et al. on the management of spontaneous retroperitoneal hemorrhage (SRH) [1]. SRH is a severe, potentially life-threatening condition and is often associated with anticoagulation (AC) [2]. As AC use becomes more prevalent, the authors deserve praises for initiating discussions on this important topic.

In this retrospective, single-center study, 54 patients underwent conservative management with or without embolization. The embolization group had worse baseline clinical characteristics. After matching for units of blood transfused, shock status, and active bleeding on CT, conservative management alone in this study demonstrated better clinical success rate and lower 30-day all-cause mortality than conservative management with embolization.

As demonstrated in this study, conservative management plays a critical role in managing SRH. However, the preference of conservative management over embolization should be carefully debated, and an individualized approach must be undertaken in the decision to pursue embolization. A variety of factors can affect embolization success, including patient characteristics, operator

experience, choice of embolization agent, and embolization technique. Unfortunately, with only 16 embolization procedures, the sample size is too small to power any meaningful subgroup analysis.

As the authors pointed out, the embolization group was more debilitated than the conservative management group, given the increased transfusion requirement and presence of shock. However, baseline comorbidities such as underlying cardiovascular disease may also play an important role in outcomes, which was not assessed in the current study [3].

As the operators' experience ranged between 1 and 18 years, procedural technique and methodology can have significant influence on patient outcome. It is unclear from the study whether single- or multi-level embolization was performed. In our practice, we usually assess and embolize lumbar arteries one level above and below the level(s) of active bleeding to exclude backdoor re-bleeding secondary to pressure shifts and collateralization.

A large percentage of patients presumably underwent gelfoam embolization only (44%), which can be a temporary embolization agent depending on the vessel size. A previous report has shown recanalization as early as 2 days [4]. Additionally, both gelfoam and micro-coils require intact coagulation pathways for adequate vessel occlusion. Deranged coagulation can predict embolization failure, which is common in patients requiring massive transfusions [5]. Embolization for SRH should therefore be performed as early as possible before consumptive coagulopathy occurs.

Note also that withholding or reversing AC may not be feasible in certain patients. Patients with left-ventricular assist devices, those with mechanical valve prostheses, and those undergoing extracorporeal membrane oxygenation

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are dependent on AC to avoid unfavorable outcomes. In these patients, early embolization of bleeding vessels may be necessary to minimize duration of AC cessation. In addition, several points need to be clarified regarding AC, including 1) which indications for AC were represented, 2) whether AC was successfully resumed for each indication, and 3) how soon after initiation of conservative management versus embolization was AC resumed.

In conclusion, we would like to congratulate the authors on this well-written article. Conservative management including AC reversal should remain the first-line therapy for SRH, if feasible. However, decisions to pursue endovascular embolization should be determined on an individual basis. Going forward, larger studies and guidelines are warranted to discern the heterogeneous SRH patient population and to determine which high-risk patient population may benefit from embolization in conjunction with conservative management.

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Declarations

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