



13th Annual Academic Surgical Congress

MEETING PROGRAM

January 30 - February 1, 2018

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12.20 Hemorrhage After On-ECMO Repair of CDH is Equivalent for Muscle Flap and Prosthetic Patch

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Introduction: The defect in severe congenital diaphragmatic hernia (CDH) often requires a prosthetic patch (patch) or muscle flap (flap) repair. The patch is easy to use but is synthetic, while the flap's autologous tissue dissection has potential for increased bleeding. Hemorrhage can be further exaggerated when maintained on therapeutic anticoagulation for extracorporeal membrane oxygenation (ECMO), especially if clinical status demands on-ECMO repair. The purpose of this study was to assess bleeding complications for on-ECMO patch compared to flap repair of CDH.

Methods: We retrospectively reviewed on-ECMO CDH repairs from 2010-2016 at a single academic children's hospital (IRB2017-2322). Exclusions included incomplete records or concomitant procedures that could result in additional blood loss. Patients were grouped by repair type and bleeding complications were captured with intra-operative blood loss, 48-hour re-operation rates for bleeding, and 48-hour post-operative blood product use.

Results: Twenty-nine patients met criteria for analysis. Thirteen (44.8%) had patch repair and 16 (55.2%) had flap repair. Eight (62.5%) of the patch and 13 (81.2%) of the flap group were left-sided defects ($p=0.223$). All had Type C or D defects with comparable distribution (Type C: patch 56%, flap 54%, $p=0.596$). There was no difference in mean gestational age at delivery (patch 37.5 ± 0.9 weeks, flap 37.2 ± 1.3 weeks, $p=0.390$) or mean age at time of repair (patch 7.46 ± 6.6 days, flap 6.00 ± 4.3 days, $p=0.476$). Both had similar total ECMO duration (patch 361.4 ± 167.1 hours, flap 277.1 ± 149.4 hours, $p=0.170$) and time from repair to decannulation (patch 7.77 ± 6.0 days, flap 7.00 ± 6.0 days, $p=0.734$). Only one patient in each group was decannulated within 48 hours of repair for bleeding. Seven patch patients (53.8%) and 9 flap patients (56.2%) survived to discharge ($p=0.596$).

Estimated intra-operative blood loss was equivalent (patch 35.3 ± 53.9 mL, flap 24.2 ± 18.4 mL, $p=0.443$). One patient (7.6%) in the patch group and two patients (12.5%) in the flap group required re-operation for bleeding ($p=0.580$). Transfusion requirements in the re-operative group were no different for the patch compared to the flap repair (282.0 mL/kg vs 208.5 ± 21.9 mL/kg, $p=0.054$). Transfusion requirements for those who did not require a reoperation were also similar (patch 120.7 ± 111.7 mL/kg, flap 118.4 ± 89.9 mL/kg, $p=0.561$).

Conclusions: Our study demonstrates the feasibility of CDH repair while on ECMO for both flap and patch techniques. Bleeding risks were no different between the two groups with regard to estimated blood loss, reoperation rates, and post-operative transfusions.

Comparison of Patch and Muscle Flap Repair for CDH on ECMO			
	Patch (n=13)	Muscle Flap (n=16)	P
Total ECMO Duration (hours)	361.4±167.1	277.1±149.4	0.170
Time from CDH Repair to ECMO Decannulation (days)	7.77±6.0	7.00±6.0	0.734
Estimated Intraoperative Blood Loss (mL)	35.3±53.9	24.2±18.4	0.443
Reoperation for Bleeding	1 (7.6%)	2 (12.5%)	0.580
48-hour Post-op Transfusion Amount (mL/kg)			
Patients Requiring Reoperation	282.0*	208.5±21.9	0.054
Patients Not Requiring Reoperation	120.7±111.7	118.4±89.9	0.561

Values expressed as means ± standard deviations or count (percentage of group)

ECMO=extracorporeal membrane oxygenation

*n=1

- Session: **12. QuickShot - Clinical/Outcomes: Pediatrics I**
- Presentation Time: **Tuesday: 7:30 - 9:30 am**
- Meeting Room: **River Terrace 3**

Academic Surgical Congress

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Sessions Listing

<i>Session Code</i>	<i>Session Title</i>	<i>Credits Earned</i>
103	3. Basic Science: General Surgery and Upper GI/Bariatric QuickShot Session	2
119	SUS Presidential Address: Enjoy the Journey	0.75
120	Hot Topic Lunch Session 1: #SoMe 2.0 - Building an Academic Career in the World of Social Media	1.5
123	SUS Presidential Session: Maintaining the Fire: Physician Wellbeing through Resilience, Intentional Culture	1.5
126	Basic Science Plenary	1.5
129	AAS Resident/Fellow Quickshot Competition	0
130	22. Basic Science: Host Inflammatory Response Oral Session	2
148	AAS Founder's Lecture: Surgical Leadership - Lessons Learned	1
149	AAS Presidential Address: Re-defining Success in Academic Surgery	0.75
152	Elsevier Lunch Session: How to Get Your Paper Accepted: Tips From the Editors of Surgery and Journal of Surgical Research	1.5
153	AAS Presidential Session: Identify Your Passion and Find Your Purpose in Your Career	1.5
163	49. Clinical/Outcomes: General Surgery QuickShot Session 2	2
172	SUS New Member Poster Session	0
174	59. Basic Science: Tissue Injury and Wound Healing Oral Session	2
191	Education Plenary	1
193	Basic Science Committee Session: So You Want to be a Surgeon-Scientist: How to Succeed in Today's Environment	1.5
195	Hot Topic Lunch Session #3: Making Research Feasible for Busy Surgeons Through Infrastructure Support: Pros, Cons, and Lessons Learned the Hard Way	1.5
196	78. Basic Science: Trauma/Critical Care, Cross-Disciplinary QuickShot Session	2
<i>Total Credit</i>		<i>24.00</i>