



Accidental Dural Puncture Management and Outcomes Following Obstetric Anesthesia at an Academic Medical Center

Caley Butler, Richard Smiley, Columbia University, NY.

- Accidental dural puncture (ADP), with associated post-dural puncture headache (PDPH), is one of the most common adverse events to occur during epidural procedures.
- There are several proposed methods to prevent PDPH following ADP, and conservative treatments for PDPH prior to attempting epidural blood patch (EBP), but existing reports of ADP outcomes following epidural analgesia or anesthesia have resulted in contradictory reports of treatment efficacy and no consistent guidelines for the management of ADP.
- **Study:** We studied demographic and procedural factors predisposing patients to ADP and PDPH as well as the efficacy of different management strategies of PDPH following ADP.
- **Methods:** Patients were identified from a quality improvement list of all women who were followed for known or suspected ADP or suspected PDPH in the postpartum or postoperative period from 12/2008 to 7/2020 (n=393). Manual chart review was used to collect details surrounding the ADP, PDPH management, and outcomes.

PDPH Results

- ADP rate 0.8% (N=253/31,500)
- PDPH rate 67% (N=175/253)
- Risk of PDPH **INCREASED** with second-stage pushing (p=0.01) with:
 - PDPH rate of 140/191 (73%) with second-stage pushing
 - PDPH rate of 35/62 (56%) without second-stage pushing
- Risk of PDPH **UNCHANGED** with intrathecal catheter left in place (p=0.08) with:
 - PDPH rate of 62/81 (77%) with catheter
 - PDPH rate of 113/172 (66%) without catheter
- Risk of PDPH **UNCHANGED** with preventative intrathecal or epidural morphine administration (p=0.36) with:
 - PDPH rate 51/80 (64%) known or suspected ADP patients who received intrathecal or epidural morphine
 - PDPH in 110/158 (70%) patients who did not receive morphine

	Total	PDPH	No PDPH	P-value
Second Stage Pushing	191/253	140/191 (73%)	51/191 (27%)	P=0.01
No Second Stage Pushing	62/253	35/62 (56%)	27/62 (44%)	
Prophylactic EBP	18/253	11/18 (61%)	7/18 (39%)	P=0.44
No Prophylactic EBP	235/253	164/235 (70%)	71/235 (30%)	
Intrathecal or Epidural Morphine	80/238*	51/80 (64%)	29/80 (36%)	P=0.36
No Morphine	158/238*	110/158 (70%)	48/158 (30%)	
Intrathecal Catheter > 24 hours	81/253	62/81 (77%)	19/81 (23%)	P=0.08
No Intrathecal Catheter	172/253	113/172 (66%)	59/172 (34%)	
BMI <25	40/242 ⁺	30/40 (75%)	10/40 (25%)	P=0.13
BMI 25-29.9	88/242 ⁺	54/88 (61%)	34/88 (39%)	
BMI 30-39.9	86/242 ⁺	65/86 (76%)	21/86 (24%)	
BMI >40	28/242 ⁺	17/28 (61%)	11/28 (39%)	
Daytime procedure (7AM-7PM)	124/253	80/124 (65%)	44/124 (35%)	P=0.11
Nighttime procedure (7PM-7AM)	129/253	95/129 (74%)	34/129 (26%)	



Epidural Blood Patch Results

- Increased likelihood of receiving blood patch for PDPH following ADP as opposed to uncomplicated procedure:
 - 102/175 (58%) vs 60/133 (45%) (p=0.02)
- Increased likelihood of requiring a second blood patch for PDPH following ADP as opposed to uncomplicated procedure:
 - 21/102 (21%) vs 5/60 (8%) (p=0.04)
- EBP nearly universally successful at alleviating symptoms, regardless of etiology
 - 99/102 (97%) success following ADP
 - 58/60 (96%) success following uncomplicated procedure

	ADP + PDPH	Uncomplicated Procedure + PDPH	P-value
EBP	102/175 (58%)	60/133 (45%)	P=0.02
EBP Success	99/102 (97%)	58/60 (96%)	P=0.88
2 nd EBP	21/102 (21%)	5/60 (8%)	P=0.04
2 nd EBP Success	21/21 (100%)	5/5 (100%)	

Conclusions

- Second-stage pushing **increases** PDPH risk
- No interventions** reduced PDPH risk
- Patients with known or suspected ADP **more likely** to need EBP or repeat EBP than patients with uncomplicated procedures

