TO PUSH OR NOT TO PUSH WITH NEURAXIAL ANALGESIA AT FULL DILATATION

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Background

The aim of this systematic review and meta-analysis of randomized controlled trials was to evaluate the effect of delayed versus immediate pushing in the second stage of labor on mode of delivery and other outcomes in women with neuraxial analgesia.

Methods

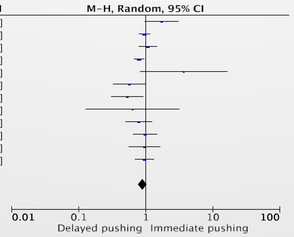
- **DATA SOURCES:** The research was conducted using MEDLINE, EMBASE, Web of Sciences, Scopus, ClinicalTrial.gov, OVID, and the Cochrane Library as electronic databases, from the inception of each database to August 2019. No restrictions for language or geographic location were applied.
- **STUDY ELIGIBILITY CRITERIA:** Selection criteria included only randomized controlled trials in pregnant women randomized to either delayed or immediate pushing during the second stage of labor.
- **STUDY APPRAISAL AND SYNTHESIS METHODS:** The primary outcome was mode of delivery. The summary measures were reported as relative risk or as mean difference with 95% confidence intervals using the random effects model of DerSimonian and Laird. An *I2* (Higgins *I2*) value of greater than 0% was used to identify heterogeneity

Results

Forest plot for the risk of operative delivery, either operative vaginal delivery or cesarean delivery

Study or Subgroup	Delayed pushing Events	Total	Immediate pushing Events	Total	Weight	Risk Ratio M-H, Random, 95% CI
Buxton 1988	16	22	8	19	5.3%	1.73 [0.96, 3.10]
Cahill 2018	162	1203	169	1200	17.6%	0.96 [0.78, 1.17]
Fitzpatrick 2002	42	88	40	90	12.0%	1.07 [0.78, 1.48]
Fraser 2000	167	936	208	926	18.5%	0.79 [0.66, 0.95]
Gillesby 2010	7	37	2	39	1.0%	3.69 [0.82, 16.63]
Goodfellow 1979	9	21	12	16	5.6%	0.57 [0.32, 1.01]
Hansen 2002	16	127	29	122	5.7%	0.53 [0.30, 0.93]
Kelly 2010	2	26	4	33	0.9%	0.63 [0.13, 3.20]
Mayberry 1999	23	81	26	72	7.6%	0.79 [0.50, 1.25]
Plunkett 2003	35	117	26	85	8.5%	0.98 [0.64, 1.49]
Simpson 2005	12	23	12	22	5.9%	0.96 [0.55, 1.65]
Vause 1998	34	68	35	67	11.5%	0.96 [0.69, 1.33]
Total(95%CI).		2746		2691.	100.%.	0.9(0.78,1.05)
Total events.	525		571			

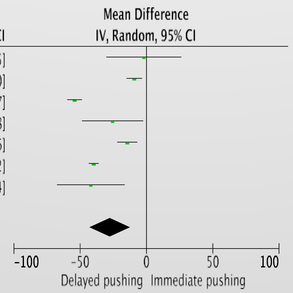
Heterogeneity :Tau²= 0.22Chi² 18.23df = 11(P= 0.083)) I² = 40
Test for overall effect Z=1.28 (P=0.20)



Forest plot for the mean of length of active pushing

Study or Subgroup	Delayed pushing Mean	SD	Total	Immediate pushing Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Buxton 1988	79	44	22	81	48	19	10.7%	-2.00 [-30.35, 26.35]
Cahill 2018	74.5	70.7	1204	83.7	76.8	1200	16.4%	-9.20 [-15.10, -3.30]
Fraser 2000	82	46.08	936	136.25	73.5	926	16.4%	-54.25 [-59.83, -48.67]
Gillesby 2010	68.2	46.2	38	93.8	56.9	39	12.2%	-25.60 [-48.72, -2.48]
Hansen 2002	35.46	29.19	127	49.94	32.04	122	16.1%	-14.48 [-22.10, -6.86]
Kelly 2010	38.9	6.9	26	78.7	7.9	33	16.6%	-39.80 [-43.58, -36.02]
Simpson 2005	59	25.4	23	101	55.9	22	11.5%	-42.00 [-67.56, -16.44]
Total(95%CI). 0.9{0.78,1.05}			2746				2691. 100.%.	
Total events.		525			571			

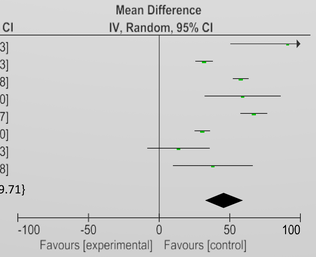
Heterogeneity :Tau²= 0.22Chi² 18.23df = 11(P= 0.083)) I² = 40
Test for overall effect Z=1.28 (P=0.20)



Forest plot for the mean of total length of the second stage of labour

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Buxton 1988	209	81	22	118	50	19	6.6%	91.00 [50.37, 131.63]
Cahill 2018	134.2	76.3	1204	102.4	79.6	1200	15.8%	31.80 [25.57, 38.03]
Fraser 2000	193.5	65.88	936	135.75	57.75	926	15.9%	57.75 [52.12, 63.38]
Gillesby 2010	166.3	64.2	38	107.2	56.3	39	9.9%	59.10 [32.10, 86.10]
Hansen 2002	116.95	44.18	127	49.94	32.04	122	15.1%	67.01 [57.45, 76.57]
Kelly 2010	117.6	12.1	26	87.1	8.6	33	15.9%	30.50 [25.00, 36.00]
Mayberry 1999	119.65	65.32	81	105.97	73.48	72	11.4%	13.68 [-8.47, 35.83]
Simpson 2005	139	39	23	101	55.9	22	9.5%	38.00 [9.72, 66.28]
Total(95%CI).			2457			2433	100.%	46.17{32.63,59.71}
Total events.		525			571			

Heterogeneity :Tau²= 292.67Chi² 96.47df = 7(P= 0.0001) I² = 93%
Test for overall effect Z=6.68(P=0.00001)

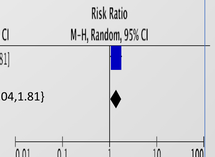


Results ……continued

Forest plot for the risk of chorioamnionitis

Study or Subgroup	Experimental Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Random, 95% CI
Cahill 2018	110	1204	80	1200	100.0%	1.37 [1.04, 1.81]
Total(95%CI).		1204		1200	100%.	1.37{1.04,1.81}
Total events.	110		80			

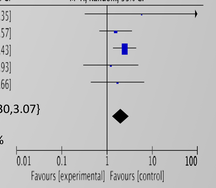
Heterogeneity :not applicable
Test for overall effect Z=2.23 (P=0.03)



Forest plot for the risk of low umbilical cord pH

Study or Subgroup	Experimental Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Random, 95% CI
Buxton 1988	3	23	0	19	2.2%	5.83 [0.32, 106.35]
Cahill 2018	14	1204	9	1200	26.4%	1.55 [0.67, 3.57]
Fraser 2000	37	934	15	926	52.2%	2.45 [1.35, 4.43]
Plunkett 2003	5	117	3	85	9.3%	1.21 [0.30, 4.93]
Vause 1998	4	18	3	23	9.9%	1.70 [0.44, 6.66]
Total(95%).		2296		2253.	100.%.	2.00{1.30,3.07}
Total events.	63		30			

Heterogeneity :Tau²=Chi² 1.88df =4(P= 0.76); I² =0%
Test for overall effect Z=3.16(P=0.002)



Conclusion

- In women with labor at term with neuraxial analgesia, delayed pushing in the second stage does not affect the mode of delivery,
- It reduces the time of active pushing at the expense of a longer second stage.
- This prolongation of labor was associated with a higher incidence of chorioamnionitis and

References

1.American College of Obstetricians and Gy- necologists. Practice bulletin no. 154: operative vaginal delivery. Obstet Gynecol 2015;126: e56–65. Reaffirmed 2018.
2.Saccone G, Ciardulli A, Baxter JK, et al. Dis- continuing oxytocin infusion in the active phase of labor: a systematic review and meta-analysis. Obstet Gynecol 2017;130:1090–6.
3.American College of Obstetricians and Gy- necologists, Society for Maternal-Fetal Medicine. Obstetric care consensus no. 1: safe prevention of the primary cesarean delivery. Obstet Gynecol 2014;123:693–711.
4.Lemos A, Amorim MM, Dornelas de Andrade A, et al. Pushing/bearing down methods for the second stage of labour. Cochrane Database Syst Rev 2017;3: CD009124.
5.Cahill AG, Srinivas SK, Tita ATN, et al. Effect of immediate vs delayed pushing on rates of spontaneous vaginal delivery among nulliparous women receiving neuraxial analgesia: a ran- domized clinical trial. JAMA 2018;320:1444–54.
6.Henderson LK, Craig JC, Willis NS, Tovey D, Webster AC. How to write a Cochrane system- atic review. Nephrology (Carlton) 2010;15: 617–24.
7.Higgins JPT, Green S, editors. Cochrane handbook for systematic reviews of in- terventions, version 5.1.0 (update March 2011). Cochrane Collaboration, 2011..
8.Moher D, Liberati A, Tetzlaff J, Altman DG; and the PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta- Analyses: the PRISMA Statement. Ann Intern Med 2009;151:264–9.
9.Goodfellow CF, Studd C. The reduction of forceps in primigravidae with epidural anal- gesia—a controlled trial. Br J Clin Pract 1979;33: 287–8.
10.Buxton EJ, Redman CWE, Obhrai M. Delayed pushing with lumbar epidural in labour— does it increase the incidence of spontaneous delivery? J Obstet Gynaecol 1988;8:258–61.
11.Vause S, Congdon HM, Thornton JG. Im- mediate and delayed pushing in the second stage of labour for nulliparous women with epidural analgesia: a randomised controlled trial. Br J Obstet Gynaecol 1998;105:186–8.
12. Mayberry LJ, Hammer R, Kelly C, True- Driver B, De A. Use of delayed pushing with epidural anesthesia: findings from controlled controlled trial. J Perinatol 1999;19:26–30
13. Fraser WD, Marcoux S, et al. for the PEO- PLE (Pushing Early or Pushing Late with Epidural) Study Group. Multicenter randomized, controlled trial of delayed pushing for nulliparous women in the second stage of labor with continuous epidural analgesia. Am J Obstet Gynecol 2000;182:1165–72.
14. Fitzpatrick M, Harkin R, McQuillan K, O'Brien C, O'Connell PR, O'Herlihy C. A randomised clinical trial comparing the effects of delayed versus immediate pushing with epidural analgesia on mode of delivery and faecal continence. BJOG 2002;109:1359–65.
15. Hansen SL, Clark SL, Foster JC. Active pushing versus passive fetal descent in the second stage of labor: a randomized controlled trial. Obstet Gynecol 2002;99:29–34
16.Plunkett BA, Lin A, Wong CA, Grotsman WA, Peaceman AM. Management of the second stage of labor in nulliparae with continuous epidural analgesia. Obstet Gynecol 2003;102:109–14.
17.Simpson KR, James DC. Effects of imme- diate versus delayed pushing during second- stage labor on fetal well-being. Nurs Res 2005;54:149–57.
18.Gillesby E, Burns S, Dempsey A, et al. Comparison of delayed versus immediate pushing during second stage of labor for nullip- arous women with epidural anesthesia. J Obstet Gynecol Neonatal Nurs 2010;39:635–44.
19.Kelly M, Johnson E, Lee V, et al. Delayed versus immediate pushing in second stage of labor. MCN Am J Matern Child Nurs 2010;35: 81–8.
20.Tuuli MG, Frey HA, Odibo AO, Macones GA, Cahill AG. Immediate compared with delayed pushing in the second stage of labor. Obstet Gynecol 2012;2:160–8.
21.Brancato RM, Church S, Stone PW. A meta- analysis of passive descent versus immediate pushing in nulliparous women with epidural analgesia in the second stage of labor. J Obstet Gynecol Neonatal Nurs 2008;37:4–12.
22.Roberts CL, Torvaldsen S, Cameron CA, Olive E. Delayed versus early pushing in women with epidural analgesia: a systematic review and meta-analysis. BJOG 2004;111: 1333–40.
23.LeLorier J, Grégoire G, Benhaddad A, Lapierre J, Derderian F. Discrepancies between meta-analyses and subsequent large random- ized, controlled trials. N Engl J Med 1997;337: 536–42.
24.World Health Organization. World Health Organization recommendations: intrapartum care for a positive childbirth experience. Geneva: World Health Organization; 2018.
25. National Institute for Health and Care Excellence. Intrapartum care for healthy women and babies. London: National Collaborating Centre for Women's and Children's Health; 2014. updated 2017
26.American College of Obstetricians and Gy- necologists. Committee opinion no. 766: approaches to limit intervention during labor and birth. Obstet Gynecol 2019;133:e164–73.
27.McQueen J, Myrlea L. Lumbar epidural analgesia in labour. BMJ 1977;1:640–1.
28.Maresh M, Chozog KH, Beard RW. Delayed pushing with lumbar epidural analgesia in labour. Br J Obstet Gynaecol 1983;90:623–7.