

Outlet Anterior Posterior Diameter: Can new values for dynamic coccygeal extension increase outlet APDs and physician-maternal confidence in vaginal route deliveries?

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Opinion Paper abstract

Full length paper in review for publication consideration

Introduction:

A review of the literature revealed an array of data questioning the sensitivity and clinical usefulness of pelvimetry in predicting route of delivery, except in obvious cases of breach, shoulder or other emergent dystocias. While both pelvic and fetal imaging has improved with ultra sound, computed tomography (CT) and magnetic resonance imaging (MRI), surgical route deliveries remain at an all time high(1).

This paper discusses a dynamic assessment for measuring outlet anterior posterior diameter (APD) based on normal natal physiologic extension of the coccygeal segments. The method assumes that normal cephalic vaginal deliveries depend upon a greater degree of coccygeal extension, during crowning, than previously reported, possibly as much as 30 to 60 degrees. Historically, route of delivery has been influenced by pelvimetry that based its outlet APD assessments on static prenatal or early stage labor pubococcygeal dimensions that do not accurately reflect maternal potential for dynamic coccygeal extension proposed to be necessary for pelvic floor distension and successful cephalic parturition. With as much as a 1-3 centimeter difference in outlet APD herein thought to separate a static coccyx from one capable of dynamic extendability, this paper presents a rationale for increasing confidence in otherwise uncomplicated cephalic presentations as well as in trial of vaginal birth after Cesarean section (VBAC).

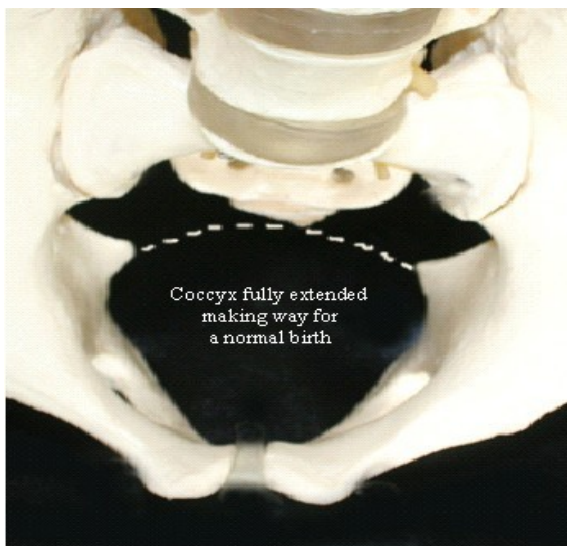


Fig. 1. Axial view of an open and normal birth canal possible when the coccyx can extend fully. Normal coccygeal range of motion was thought to be zero to 30 degrees until Wooley and Kemper achieved 70-90 degrees, for women of child bearing age, during treatment of coccydynia in the 1980s. Soon it was observed that a consistent set of obvious abnormalities accompanied coccyx dysfunction, including loss of lumbopevic flexion and seriously impaired thigh strength. Once these signs resolved, as coccydynia lessened, the term "SacroCoccygeal or S/C" Syndrome was coined. Later it was noticed that women with the syndrome had more difficulty delivering, the cause of which could be reduced A-P pelvimetry. Further research is needed to assess this possibility.

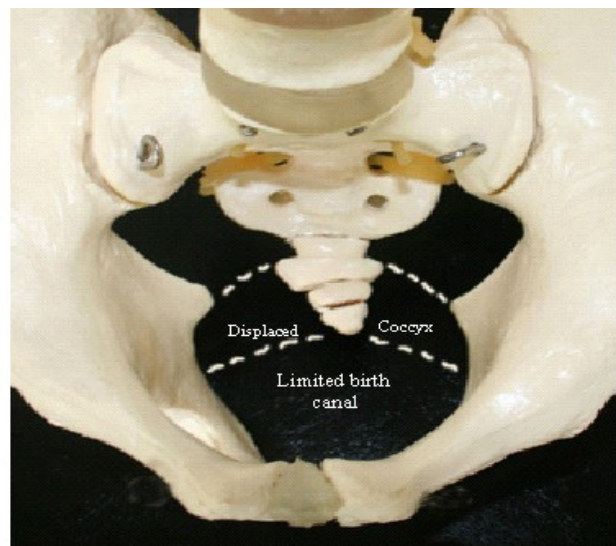


Fig. 2. Axial view of blocked birth canal. Coccyx shown with typical trauma-induced, anterior-superior displacement. As the fractured or dislocated coccyx heals with fibrosis, the increasingly immobile coccyx becomes less able to extend fully, quite possibly resulting in the need for Cesarean section.

Wooley and Kemper describe procedures to restore coccygeal motion thought to protect the spinal cord and dura from excessive tension as well as enabling normal birthing. Impaired spinal motion, pelvic muscle weakness and associated pain is now called the *SacroCoccygeal Syndrome* and *SacroCoccygeal Reflex* respectively.

Conclusion:

While more research is needed to compare prenatal static APD to APD occurring in successful vaginal deliveries, the authors' respectfully suggest that normal vaginal delivery depends upon considerable coccygeal extension in order for pelvic floor distension and cephalic presentation to occur. More research is needed to determine if dynamic assessment of outlet APD, in women with otherwise sufficient obstetrical conjugates may improve confidence in vaginal delivery in primiparas and in trials of labor after cesarean. It is beyond the scope of this paper to review procedural guidelines for treatment of the sacrococcygeal (SC) syndrome.

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