Sacral Dimple – Tethered Cord Pathway v1.0: Diagnosis

Approval & Citation | Summary of Version Changes | Explanation of Evidence Ratings

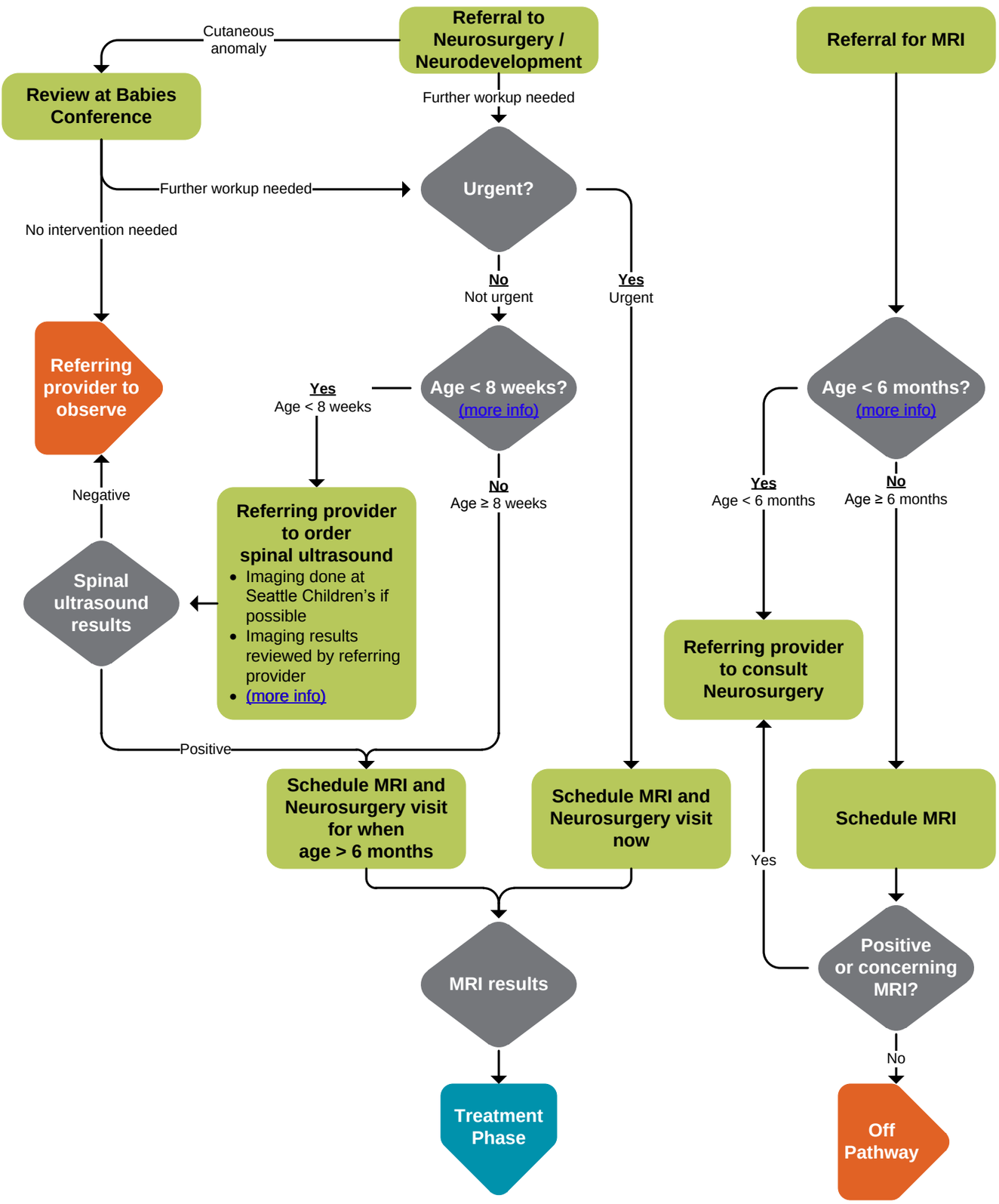
REFERRAL AND DIAGNOSIS

Inclusion Criteria
- All patients **considered or referred in** for
  1) cutaneous sacral, coccygeal, and/or gluteal anomaly OR
  2) closed spinal dysraphism (radiographic)

Exclusion Criteria
- Patients with open spinal dysraphism

More Information
- PE056 Spina Bifida
- PE589 Tethered Spinal Cord
- PE1999 Anesthesia for Radiology Tests
- PACU Phase I and Phase II Guidelines of Care, 10471 (page 19)

Simple Sacral Dimple
All 3 criteria must be met.
A simple sacral dimple is:
- No more than 2.5 cm from anus
- Less than 5 mm diameter
- Localized in gluteal cleft



For questions concerning this pathway, contact: SacralDimplePathway@seattlechildrens.org

Last Updated: May 2019
Next Expected Review: May 2024

Sacral Dimple – Tethered Cord Pathway v1.0: Treatment

Approval & Citation | Summary of Version Changes | Explanation of Evidence Ratings

SURGERY AND FOLLOW-UP

Inclusion Criteria
- All patients **with known diagnosis** referred in for
  1) cutaneous sacral, coccygeal, and/or gluteal anomaly OR
  2) closed spinal dysraphism (radiographic)

Exclusion Criteria
- Patients with open spinal dysraphism

More Information
- PE056 Spina Bifida
- PE589 Tethered Spinal Cord
- PE171 Laminectomy

Simple Dysraphism
- Fatty filum only

MRI results during Neurosurgery visit

Acronyms
- EMG: electromyography
- RBUS: renal bladder ultrasound
- UDS: urodynamic study

Simple dysraphism / Complex dysraphism

Schedule Pre-Treatment Visits

Urology (if any urological abnormalities)
- Availability usually within 2-3 weeks
- Call consult attending, if scheduling issues
- Urologist orders urologic studies (RBUS, uroflow, EMG, UDS, etc.)

Schedule Pre-Treatment Visits

Neurodevelopment
- Use spina bifida slots
- Availability usually on Tuesday and Wednesday

Urology
- Availability usually within 2-3 weeks
- Call consult attending, if scheduling issues
- Urologist orders urologic studies (RBUS, uroflow, EMG, UDS, etc.)

Surgery and Post-Op

- For urinary retention issues…
  - If inpatient, official consult with Urology
  - If outpatient, call Urology Clinic for urologist who performed UDS

Simple dysraphism / Complex dysraphism

Schedule Post-Treatment Visits

Neurosurgery
- 3 months post-op

Neurodevelopment
- 3 months post-op
- 1 year post-op

Urology
- 6 weeks post-op for RBUS
- 6 months post-op for UDS

Schedule Post-Treatment Visits

Neurosurgery
- 3 months post-op

Neurodevelopment
- 3 months post-op
- 6 months post-op

Urology
- 6 weeks post-op for RBUS
- 6 months post-op for UDS

Long-Term Follow-up Visits

Neurodevelopment
- As needed

Neurosurgery
- As needed

Long-Term Follow-up Visits

Neurodevelopment
- Annually

Neurosurgery
- Prompt return visit when clinically indicated

!

Warning signs for re-tethering
- **Worsening urological function**
- **Back or leg pain**
- **Tripping more**
- **See PE589 for more info**

Last Updated: May 2019
Next Expected Review: May 2024

Definitions

Simple Sacral Intragluteal Dimple

Dimple within a symmetric gluteal crease AND less than 5mm in diameter WITH no other associated cutaneous abnormalities

Associated Cutaneous Abnormalities

Midline capillary hemangioma, hypertrichosis, dermal sinus tract, cutis aplasia, asymmetric gluteal crease, lipoma, subcutaneous dermoid cyst, pseudo tail, true tail

Clinical Sequelae

Pain, weakness, wasting of lower extremity; bowel/bladder incontinence; UTI (1+ boy, 2+ girl), midline abscess, meningitis; club foot

Characterization of Dimples

Simple Low Risk Dimple

- Coccygeal position
- Dimple base orientation to caudal coccygeal cartilage in ultrasound
- No associated mass
- Localized in cranial gluteal cleft
- No more than 2.5cm from anus
- Midline location
- <5mm diameter
- Cutaneous base visible

High Risk Dimple for Dysraphism

- Lumbosacral position
- Soft tissue mass present
- No relation to gluteal cleft
- Distance from anus >2.5cm
- >5mm diameter
- Not midline in location
- Base not visible

(Schenk, 2006)

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Spinal Ultrasound

Why spinal ultrasound for patients younger than 8 weeks old?

- A young infant's vertebral bodies are un-ossified, providing an acoustic window to visualize the spinal canal and spinal cord. As infants age, ossification of the spine leads to loss of the acoustic window.
- A spinal ultrasound is simple, non-evasive, and does not require anesthesia or sedation.
- Spinal ultrasound is a well-established method to evaluate for suspected spinal dysraphism in young infants.

(Ausili, 2018; Cho, 2019; Meyers, 2017; Nair, 2016)

Note: Not appropriate to order a spinal ultrasound in infants ≥ 8 weeks old

MRI

Why neurosurgery consult for MRI on patients younger than 6 months old?

- To obtain an MRI requires the patient to be perfectly still in order to obtain images of good diagnostic quality. On average, a spine MRI will take 30-45 minutes to complete. Young children will require anesthesia to complete this exam.
- There are nuanced considerations about what age and what image is most appropriate to work up a sacral dimple. Having neurosurgery review patients younger than 6 months old prior to scheduling an MRI will assure the correct exam is completed at the correct age. The goal is to minimize anesthesia exposure in young infants unless absolutely necessary.
- Waiting until after 6 months of age to give anesthesia allows for airway growth and neurologic and respiratory system development, which in turn decreases the risk of complications associated with anesthesia. It also may reduce the risk of any potential neurocognitive impairment that could possibly occur due to anesthesia (which at the moment is not defined).
- Babies less than 6 months of age at the time of the MRI will need to be observed for risk of apnea and cardio/pulmonary complications for a minimum of 4 hours post anesthesia. Premature babies less than 50 weeks post-conceptual age will require admission overnight to the hospital for observation. Both a prolonged stay and additional hospitalization is disruptive to the family schedule and requires increased hospital resources.

More Information

- PE1999 Anesthesia for Radiology Tests
- PACU Phase I and Phase II Guidelines of Care, 10471 (page 19)

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CSW Sacral Dimple Pathway Approval & Citation

Approved by the CSW Sacral Dimple Pathway team for May 30, 2019, go-live

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Retrieval Website: http://www.seattlechildrens.org/pdf/sacral-dimple-tethered-cord-pathway.pdf

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Evidence Ratings

This pathway was developed through local consensus based on published evidence and expert opinion as part of Clinical Standard Work at Seattle Children's. Pathway teams include representatives from Medical, Subspecialty, and/or Surgical Services, Nursing, Pharmacy, Clinical Effectiveness, and other services as appropriate.

When possible, we used the GRADE method of rating evidence quality. Evidence is first assessed as to whether it is from randomized trial or cohort studies. The rating is then adjusted in the following manner (from: Guyatt G et al. J Clin Epidemiol. 2011;4:383-94, Hultcrantz M et al. J Clin Epidemiol. 2017;87:4-13.):

Quality ratings are *downgraded* if studies:

- Have serious limitations
- Have inconsistent results
- If evidence does not directly address clinical questions
- If estimates are imprecise OR
- If it is felt that there is substantial publication bias

Quality ratings are *upgraded* if it is felt that:

- The effect size is large
- If studies are designed in a way that confounding would likely underreport the magnitude of the effect OR
- If a dose-response gradient is evident

Certainty of Evidence:

✪✪✪✪ High: The authors have a lot of confidence that the true effect is similar to the estimated effect
✪✪✪○ Moderate: The authors believe that the true effect is probably close to the estimated effect
✪✪○○ Low: The true effect might be markedly different from the estimated effect
✪○○○ Very low: The true effect is probably markedly different from the estimated effect
Guideline: Recommendation is from a published guideline that used methodology deemed acceptable by the team
Expert Opinion: Based on available evidence that does not meet GRADE criteria (for example, case-control studies).

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Summary of Version Changes

- **Version 1.0 (5/30/2019):** Go live.

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Medical Disclaimer

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required.

The authors have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication.

However, in view of the possibility of human error or changes in medical sciences, neither the authors nor Seattle Children's Healthcare System nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such information.

Readers should confirm the information contained herein with other sources and are encouraged to consult with their health care provider before making any health care decision.

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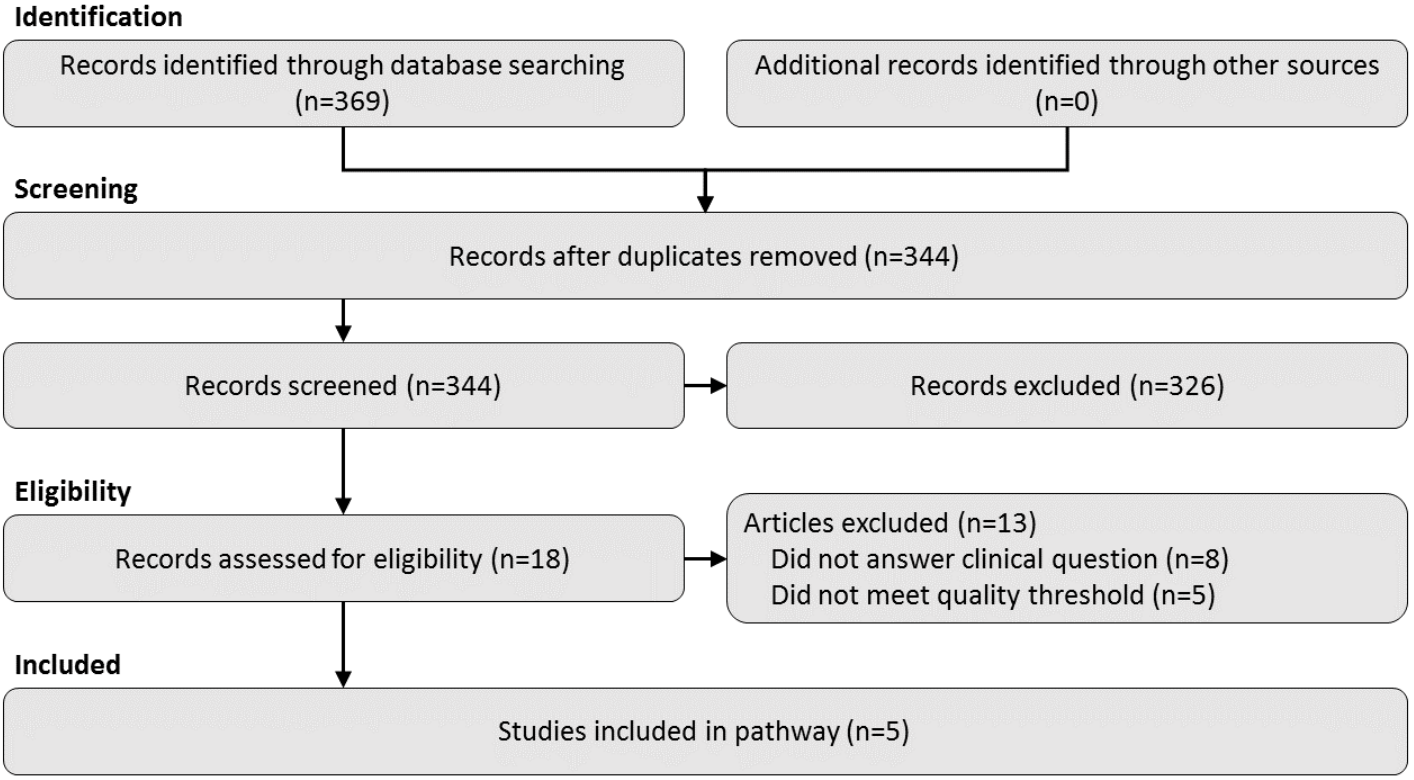
Bibliography

Search Methods, Sacral Dimple, Clinical Standard Work

Two literature searches targeting synthesized literature were conducted in October 2018. The first search for sacral dimple or neural tube defects was limited to humans and executed in Ovid Medline, Embase, Cochrane Database of Systematic Reviews (CDSR) and Turning Research into Practice (TRIP) databases. The second search for diagnostic imaging of the spine was limited to ages 0-12 and executed in Ovid Medline and Embase. All results were limited to 2008 to current and English.

Sue Groshong, MLIS
May 8, 2019



Flow diagram adapted from Moher D et al. BMJ 2009;339:bmj.b2535

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