1 Patient Information

1 PATIENT DETAILS

Name
Ava M. Fitzgerald

Date of Service
05/06/2026

DOB
03/12/2013

Provider
Dr. Jonathan K. Park, MD — Pediatric Orthopedic Surgery

Age
13 years, 1 month

MRN
PO-2026-0341

Sex
Female

Visit Type
Follow-up Scoliosis Evaluation — Brace Non-Compliance Review

Affected Body Part / Laterality
Spine — double major curve (right thoracic, left lumbar)

Parent / Guardian Present
Mother: Christine Fitzgerald (biological mother, primary guardian)

CC Chief Complaint

2 PRIMARY PEDIATRIC MUSCULOSKELETAL CONCERN

Patient presents with her mother for a 4-month scoliosis follow-up. Her mother expresses significant concern about curve progression: 'The last X-ray showed her curve got much worse and she's been refusing to wear her brace. She's embarrassed about it at school and I don't know what to do.' Ava reports intermittent right thoracic back pain (3–4/10) that is new since the last visit, and her mother has noticed increasing shoulder asymmetry and rib prominence over the past 3 months. Ava acknowledges wearing her brace 'maybe 4 hours a day' despite a prescribed 18 hours/day regimen.

S Subjective

3 PATIENT- & CAREGIVER-REPORTED SYMPTOMS & DEVELOPMENTAL CONTEXT

3a ONSET & MECHANISM

Adolescent idiopathic scoliosis (AIS) first identified at her 12-year-old well-child visit by her pediatrician (Dr. Sarah Moore, MD) who noted shoulder asymmetry and referred for spine evaluation. Initial X-rays (09/2024) confirmed right thoracic scoliosis 28° Cobb angle (T5–T11) and left lumbar 24° (T11–L3). Brace was prescribed at that time (Boston TLSO) given Risser 1 (skeletally immature) and curve approaching bracing threshold. Subsequent X-rays (01/2025) showed 36° right thoracic — concerning progression. Today's X-rays (obtained this morning before appointment): Right thoracic 48°; left lumbar 38°. Total progression: +20° right thoracic and +14° left lumbar over 8 months. This rate of progression (+12° in the last 4 months alone) is highly concerning and surpasses typical brace failure criteria.

3b LOCATION & LATERALITY

Spine: Double major curve pattern. RIGHT THORACIC CURVE: Apex T8, extending from T5 to T11. Measured 48° on today's X-ray (up from 36° at last visit 4 months ago). LEFT LUMBAR CURVE: Apex L2, extending from T11 to L4. Measured 38° today (up from 32° at last visit). No cervical curve component identified.

3c PAIN CHARACTERISTICS

Quality / Severity
Right thoracic/paraspinal area — intermittent aching 3–4/10. New onset since last visit (~2–3 months). Not constant.

Timing / Progression
Pain occurs after prolonged sitting at school (>45 min) or after sports. Resolves with rest.

Pain limiting activity / sleep / school
Pain does NOT limit sleep or school attendance. Mild limitation in sports — reports discomfort after soccer practice. Pain is a new symptom; prior visits were pain-free.

3d FUNCTIONAL IMPACT

Ava participates in club soccer (midfielder) and school cheerleading. She has not restricted either activity. She notices she tires faster with activities requiring trunk rotation. She does not report any respiratory limitations with exercise. No limitation in walking, running, or stairs. She is performing normally academically (8th grade honor roll). The primary functional impact is psychosocial: significant embarrassment about the brace at school — she refuses to wear it at school and removes it immediately upon arriving home. She reports two peers have made negative comments about the brace being visible under her clothing.

3e DEVELOPMENTAL / GROWTH HISTORY

Born full-term via vaginal delivery without complications. All developmental milestones within normal limits. Menarche: Age 12 years, 4 months (approximately 8 months ago — September 2025). Growth rate: Mother reports Ava grew approximately 5 cm (2 inches) in the past year — consistent with active pubertal growth phase. Height at today's visit: 162 cm (63.8 in) — up from 158 cm at last visit 4 months ago (1.5 cm growth in 4 months). No limb length discrepancy noted. No family history of scoliosis surgery (mother has mild scoliosis managed conservatively). No known genetic syndrome.

3f ASSOCIATED SYMPTOMS

New right shoulder elevation and right rib hump visible to mother and patient — both noted to have worsened over the past 3 months. Right shoulder higher than left. Right thoracic rib prominence when bending forward (Adam's bend test). Left flank fullness on standing. Mild right waist asymmetry. No neurologic symptoms: no arm or leg numbness/tingling, no weakness, no difficulty walking. No bowel or bladder symptoms. No breathing difficulty at rest or with exertion (pulmonary function not formally tested but patient is an active soccer player without exertional respiratory limitation).

3g PRIOR TREATMENT

Boston TLSO custom brace (09/2024): Prescribed at 18 hours/day, modified to fit at 12 months (01/2025) due to growth. Brace compliance per patient self-report today: approximately 4 hours/day. Brace sensor log (if applicable): Sensor data from Boston O&P reveals average daily wear 4.2 hours/day over the past 4 months — dramatically below the 18-hour prescription. Physical therapy x6 sessions (09/2024–12/2024) for scoliosis-specific exercises (Schroth method) — discontinued when Ava expressed resistance. No injections, medications, or surgery. Vitamin D supplementation: 1000 IU daily since 2024.

3h PERTINENT NEGATIVES

Denies fever, night sweats, or unexplained weight loss (no atypical scoliosis/tumor concern). Denies night pain at rest (important red flag exclusion — night pain in scoliosis suggests tumor or infection rather than AIS). Denies progressive neurologic symptoms (arm/leg weakness, numbness, bowel/bladder dysfunction). No history of neuromuscular disease. No prior falls or trauma contributing to curve. No left thoracic curvature (left thoracic curve is a red flag for intraspinal pathology — ruled out; this is a right thoracic dominant AIS pattern).

O Objective

4 MEASURABLE & OBSERVED PEDIATRIC ORTHOPEDIC FINDINGS

V VITALS

Temperature	98.0°F
Blood Pressure	110/68 mmHg
Heart Rate	76 bpm
Respiratory Rate	14 breaths/min
Oxygen Saturation	99% on room air
Height / Weight	162 cm / 52 kg — Height up 4 cm from last visit
Pain Score (Numeric Rating Scale)	2/10 at rest; 4/10 after prolonged sitting

4a GENERAL APPEARANCE

Cooperative and moderately embarrassed 13-year-old female. Alert and developmentally appropriate. She is somewhat guarded during exam — cooperative with mother's encouragement. No distress at rest. Well-nourished, appropriate BMI for age. Good hygiene. Dressed in school clothes; brace not worn today.

4b INSPECTION

STANDING INSPECTION: Right shoulder elevated approximately 2.5 cm above left. Right hemithorax more prominent than left. Right waist less defined than left (lateral trunk shift approximately 1.5 cm right of plumb line). Left flank fullness consistent with lumbar curve prominence. Bilateral scapulae: right scapula elevated and more medially displaced. Head is centered (no cervical compensation). POSTERIOR VIEW: Visible right thoracic rib prominence and left lumbar prominence in standing. ADAM'S FORWARD BEND TEST: Right thoracic rib hump: 18mm scoliometer reading (severe — surgical threshold typically >7mm for bracing, >10mm concerning for progression). Left lumbar prominence: 12mm. ATR (Angle of Trunk Rotation): Right thoracic ATR 18° — this is severe. No cervical prominence. SKIN: No café-au-lait spots or axillary freckling (no neurofibromatosis features). No hairy patch or dimple over sacrum (no spinal dysraphism signs). No previous surgical scars.

4c PALPATION

Bilateral paraspinal tenderness at right T6–T9 levels (mild, consistent with curve apex strain). No midline tenderness or bony step-offs. No masses. Spinous processes palpable without gaps. No warmth. No flank tenderness. Bilateral PSIS symmetric to palpation. Left iliac crest slightly higher than right on prone examination — consistent with lumbar curve.

4d RANGE OF MOTION

Active ROM

Lumbar flexion: 80° (mild restriction). Extension: 15°. Lateral flexion: 25° right/30° left (asymmetric — right lateral flexion restricted; consistent with right thoracic curve tightness). Rotation: limited and asymmetric.

Passive ROM

Passive range not formally different from active. Bending flexibility tested via side-bending X-rays (ordered for surgical planning).

Pain-Limited Motion

Pain with right lateral flexion at end range (4/10) — right thoracic curve side.

Comparison

No contralateral comparison applicable for spine; ATR/scoliometer measurements used for severity quantification.

4e STRENGTH / MOTOR FUNCTION

Upper extremity: 5/5 bilaterally in all muscle groups tested. Lower extremity: Hip flexors 5/5, quadriceps 5/5, tibialis anterior 5/5, gastrocnemius 5/5, EHL 5/5 bilaterally. Muscle tone: normal and symmetric. No spasticity. Core strength: Reduced by functional testing — unable to maintain neutral spine during standardized plank test for age (30 seconds vs. expected >60 seconds for age 13). This is consistent with paraspinal deconditioning from curve and reduced exercise tolerance in the trunk.

4f NEUROVASCULAR STATUS

Distal Sensation

Intact to light touch and pinprick throughout bilateral upper and lower extremities. No dermatomal deficits.

Motor Function

No focal deficits (5/5 throughout, as above)

Distal Pulses

2+ bilateral dorsalis pedis and posterior tibial

Capillary Refill / Perfusion

<2 seconds bilaterally; normal perfusion

4g GAIT / FUNCTIONAL TESTING

Normal gait pattern — no limp, no Trendelenburg. Toe-walking: intact. Heel-walking: intact. Tandem gait: intact. No neurologic gait pattern. Subtle right trunk lean present during walking — consistent with lateral trunk decompensation. Single-leg balance: Intact bilaterally, age-appropriate. Functional squat: Full depth achieved without compensation. Running pattern (observed in hallway): Slight right shoulder drop during running — consistent with trunk imbalance from thoracic curve.

4h SPINE / POSTURE

ADAM'S FORWARD BEND TEST: Right thoracic rib hump 18mm (scoliometer), left lumbar hump 12mm — both significantly elevated. Sagittal profile: Thoracic kyphosis appears mildly reduced (hypokyphosis, T2–T12 estimated 15° clinically — normal 20–45°). Lumbar lordosis: Normal clinically. No cervical kyphosis or prominence. Shoulder/pelvic asymmetry: Right shoulder elevated 2.5 cm (measured with shoulder blocks). Pelvis: Level on clinical assessment (no leg length discrepancy on block test — pelvis level with 5mm block correction for mild functional LLD from lumbar curve).

4i SKIN / CAST / BRACE CHECK

Brace not worn today. At prior visit, brace skin tolerance was appropriate — no pressure sores. Mother reports Ava removes brace immediately after school; no skin breakdown currently. No abdominal skin irritation or axillary pressure marks reported.

GD Growth / Development Considerations

5 PEDIATRIC-SPECIFIC FACTORS INFLUENCING CARE

Skeletal Maturity / Open Growth Plates

Growth-Related Deformity Risk

Risser Stage 2 (iliac apophysis ossification 26–50%) — confirmed on today's X-ray. Triradiate cartilage closed (closed on 01/2025 X-ray). Sanders Digital Skeletal Maturity (hand/wrist bone age): Awaited — ordered today for surgical planning. Estimated 2–3 years of significant remaining growth.

Developmental Milestones

All milestones achieved normally. No neurodevelopmental concerns.

Impact on Growth, Alignment & Future Function

Curves approaching 50° in adolescence have a high likelihood of continued adult progression (0.5–1°/year post-skeletal maturity for thoracic curves >50°). Pulmonary compromise risk begins when thoracic curves exceed 70–80°. Cosmetic and quality-of-life impact is current and significant.

HIGH — Risser 2 with rapid curve progression (+12° in 4 months) and active pubertal growth (menarche 8 months ago, height velocity still elevated). This combination carries the highest risk of continued progression regardless of bracing.

Caregiver Involvement

Mother highly engaged and motivated; Ava is resistant but agrees to participate in shared decision-making. Father not present today. Parental authority available for treatment decisions.

L Lab & Imaging Results

6 REVIEWED DATA

6a IMAGING STUDIES

PA AND LATERAL STANDING SCOLIOSIS FILMS (36-inch, today 05/06/2026): RIGHT THORACIC CURVE: T5–T11, apex T8, Cobb angle 48° (up from 36° at 01/2025 visit — 12° progression in 4 months). Curve convexity: right. Rotation: Nash-Moe grade III at apex T8. CORONAL BALANCE: Lateral trunk shift 1.5 cm right of C7 plumb line. LEFT LUMBAR CURVE: T11–L4, apex L2, Cobb angle 38° (up from 32° — 6° progression in 4 months). Curve convexity: left. Rotation: Nash-Moe grade II. SKELETAL MATURITY: Risser Stage 2 bilateral iliac crests. Triradiate cartilage closed. SAGITTAL PROFILE: Thoracic kyphosis T2–T12: 14° (hypokyphosis — flat back thoracic profile, classic AIS pattern). Lumbar lordosis T12–S1: 42° (normal). SIDE-BENDING FILMS: ORDERED TODAY for surgical planning — to assess flexibility of each curve (important for determining whether upper instrumented vertebra and lowest instrumented vertebra can be reduced to acceptable alignment). COMPARISON: 09/2024: RT 28°, LL 24°. 01/2025: RT 36°, LL 32°. 05/2026: RT 48°, LL 38°. Total progression: RT +20°, LL +14° over 8 months. This progression rate is well above the expected range for a braced patient.

6b LABORATORY STUDIES

No labs ordered today — not indicated for AIS evaluation unless systemic disease is suspected. Vitamin D 25-OH (from pediatrician, 04/2026): 34 ng/mL (sufficient on supplementation). No metabolic bone labs needed. No inflammatory markers — normal ESR/CRP at prior pediatric visit; no atypical features suggesting inflammatory etiology.

6c OTHER DIAGNOSTICS

BRACE SENSOR DATA (Boston O&P sensor log): Average daily wear past 4 months — 4.2 hours/day (reported by Boston O&P at patient's request from sensor in brace frame). HAND/WRIST BONE AGE (Greulich-Pyle): Ordered today — will help confirm skeletal maturity stage and remaining growth estimate for surgical planning. SPINAL CORD MRI (if applicable): MRI brain and spine was NOT previously ordered — given AIS pattern (right thoracic, no neurologic symptoms, no atypical features), MRI is not routinely indicated per Scoliosis Research Society guidelines. HOWEVER: If surgery is planned, MRI cervical-lumbar spine ordered today to rule out Chiari malformation, syrinx, or tethered cord before proceeding to surgery (standard pre-surgical protocol). PULMONARY FUNCTION TESTS: Not yet obtained — will be ordered at next visit pre-surgery given thoracic curve >40° (FVC and FEV1 baseline recommended). SRS-22 QUESTIONNAIRE (patient-completed today): Total score 3.1/5.0 — domains: Function 3.4, Pain 3.8, Self-image 2.3 (most impaired), Mental health 3.2. Self-image domain score 2.3 reflects significant psychosocial impact, consistent with brace refusal.

A Assessment

7 PEDIATRIC ORTHOPEDIC CLINICAL INTERPRETATION

Ava Fitzgerald is a 13-year-old female with ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS), King-Moe/Lenke classification to be confirmed on side-bending films — likely Lenke 3 or 4 (double major structural pattern). Key clinical findings driving management: (1) RAPID CURVE PROGRESSION: +12° thoracic progression in 4 months (from 36° to 48°) — this is nearly double the typical threshold for progression concern (>6° per 6 months). Total progression +20° right thoracic over 8 months. (2) CURRENT COBB ANGLE: Right thoracic 48° — approaching the surgical threshold of 50° with documented progression. At the current rate, she will exceed 50° within 1–2 months and 55° within 3–4 months. (3) RISSER 2, ACTIVE PUBERTAL GROWTH: Most vulnerable period for AIS progression. She has an estimated 2–3 years of significant remaining skeletal growth, meaning continued progression without intervention is highly likely. (4) BRACE FAILURE: Documented non-compliance (4.2 hours/day vs. 18 prescribed) has negated any potential bracing benefit. Even with full compliance, some evidence suggests Risser 2 curves approaching 48° with this rate of progression have a high failure rate with bracing alone. (5) NEUROLOGIC STATUS: Normal examination — no myelopathy, no radiculopathy. (6) PSYCHOSOCIAL IMPACT: SRS-22 self-image domain 2.3 — significantly impaired. Brace non-compliance driven by body image concerns. SUMMARY: This patient has crossed

the threshold from brace management to surgical consideration. The combination of 48° Cobb angle, documented rapid progression, Risser 2, active growth, brace non-compliance, and onset of new axial pain creates a strong clinical case for proceeding to posterior spinal fusion (PSF) to prevent further deformity and its long-term consequences.

P Plan

8 PEDIATRIC ORTHOPEDIC MANAGEMENT

8a IMMOBILIZATION & ACTIVITY RESTRICTION

BRACE: Given the curve has reached 48° with rapid progression despite brace prescription, and documented sensor-confirmed non-compliance, bracing is no longer likely to alter the surgical decision. However: Ava is being asked to maintain brace wear at 8 hours/day minimum (sleeping hours) for the next 4–6 weeks while surgical planning proceeds, to prevent further rapid progression before surgery. This is a realistic and compassionate modification of the prior prescription given her documented compliance history and upcoming surgery discussion. No restrictions placed on sports (soccer, cheerleading) at this time — activity does not worsen AIS progression. Continued active lifestyle recommended.

8b WEIGHT-BEARING STATUS & SCHOOL / SPORTS LIMITATIONS

Weight-Bearing Status
Full weight-bearing — no restriction

School Restrictions
None currently; post-operatively: typically 4–6 weeks off PE/sports, return to school ~2–4 weeks post-op

Sports / PE Restrictions
No current sports restriction. Post-operatively: no contact sports for 3–6 months. Return to cheerleading and soccer at 6 months post-op with physician clearance.

8c PHYSICAL THERAPY & PAIN CONTROL

Pain management: Ibuprofen 400 mg PO PRN with food for activity-related back pain (not scheduled use). Heat PRN to right paraspinal region. PT: Pre-operative Schroth-based scoliosis physical therapy referral placed — 6 sessions over the next 4–6 weeks before surgery for trunk strengthening, breathing exercises, and post-operative recovery preparation. Post-operative PT plan will be established at the surgical planning visit.

8d SURGICAL PLAN

SURGICAL RECOMMENDATION: Posterior Spinal Fusion (PSF) with pedicle screw instrumentation. TIMING: Tentative scheduling for 07/2026 (approximately 6–8 weeks from today), following: (1) Completion of side-bending films, bone age, and MRI for planning; (2) Pulmonary function tests; (3) Pre-operative optimization and consents. PLANNED PROCEDURE: PSF approximately T4–L3 (precise levels to be determined based on side-bending film flexibility and curve flexibility analysis). INSTRUMENTATION: Bilateral pedicle screws with 5.5mm titanium rod construct + transverse connectors. BONE GRAFT: Autologous local bone graft supplemented with allograft. NEUROLOGIC MONITORING: Intraoperative SSEP and MEP neuromonitoring — standard for scoliosis surgery. EXPECTED CORRECTION: 60–70% Cobb angle reduction (right thoracic from 48° to approximately 15–20°) — typical for flexible adolescent curves. INFORMED CONSENT PROCESS: Initial surgical discussion initiated today. Full surgical consent visit scheduled for 05/27/2026. Parents given written surgical education materials.

8e ADDITIONAL WORKUP & REFERRALS

1. Side-bending scoliosis films: To be obtained at UNC radiology this week — 05/08/2026. 2. Hand/wrist bone age (Greulich-Pyle): Ordered today. 3. MRI full spine without contrast: Ordered today — pre-surgical protocol to rule out Chiari, syrinx, tethered cord (standard pre-operative scoliosis MRI). 4. Pulmonary function tests: Ordered — baseline FVC and FEV1 before thoracic surgery. 5. Pre-op labs (pre-surgical visit 05/27/2026): CBC, CMP, coagulation panel, type and screen. 6. Anesthesia pre-op: Pediatric anesthesia team at UNC Children's (scheduled at surgical planning visit). 7. Adolescent psychology referral: Placed — given SRS-22 self-image 2.3, brace non-compliance driven by body image concerns, and upcoming major surgery decision. Dr. Amanda Reynolds, PhD (Adolescent Psychology) — appointment within 3 weeks.

8f CAREGIVER EDUCATION

Extensive discussion with Ava and her mother (50 minutes total): (1) CURRENT SITUATION explained clearly to both: the curve has progressed significantly and surgery is now the recommended treatment to prevent long-term deformity, chronic pain, and potential cardiopulmonary limitation; (2) Ava was included in the conversation throughout — she was quiet but engaged; she stated 'I knew the brace wasn't working but I was scared of surgery too'; (3) SURGICAL RECOVERY: Approximately 5–7 days in hospital, 2–4 weeks at home before returning to school, 6 months to full sports. Expected correction is significant cosmetically — scoliosis will be dramatically reduced; (4) RISKS explained: infection, implant failure, neurologic injury (<0.5% at experienced centers), blood loss, pain, rare non-fusion; (5) BRACING modification to 8 hours/day (sleeping) explained; (6) Mother given SRS-22 parent information sheet and scoliosis surgery guide booklet; (7) Psychology referral explained to Ava as supportive — 'to help you process this big decision and the surgery'; Ava agreed to attend.

F Follow-Up

9 REASSESSMENT PLAN

Follow-Up Schedule

Side-bending films: 05/08/2026. Psychology: 05/21/2026 (Dr. Reynolds). Full surgical consent + pre-op planning: 05/27/2026 — Ava, mother, and ideally father present. PFTs: 05/20/2026. MRI spine results: Review at 05/27 visit. Bone age results: Review at 05/27 visit. Tentative surgery: Week of 07/08/2026 (UNC Children's OR schedule pending). Post-op clinic at 1 week, 6 weeks, 3 months, 6 months.

TIME DOCUMENTATION & BILLING

Total Time
55 minutes

E/M Level
99214 — Established patient, moderate-high complexity

Counseling / Coordination Time
25 minutes

Basis for Billing
Medical Decision Making — High Complexity

Primary ICD-10 Code
M41.124 — AIS, thoracic region (right thoracic 48° Cobb)

Secondary ICD-10 Code(s)
M41.126 — AIS, lumbar region (left lumbar 38° Cobb); Z23 — Encounter for immunization (deferred — not applicable); F99 — Adolescent psychosocial adjustment concern

PROVIDER NAME	CREDENTIALS	DATE & TIME
Jonathan K. Park, MD	MD — Pediatric Orthopedic Surgery | Fellowship-Trained | Board Certified (ABOS)	05/06/2026, 11:45 AM