What are the available evidences for indications for spinal fixation in pyogenic spinal infections?

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Why is this topic important

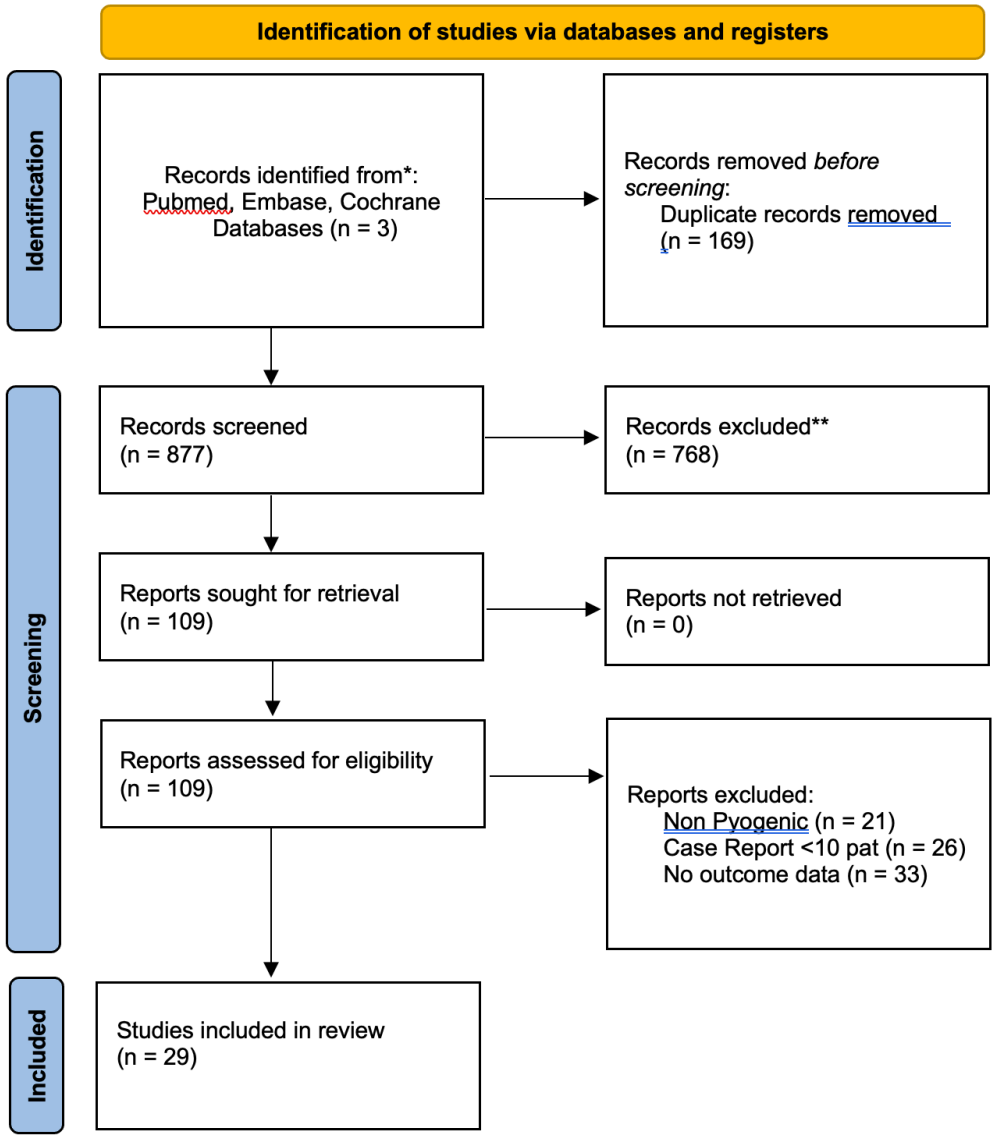
- Pyogenic spondylodiscitis may cause instability, pain, and neurologic deficits.
- Historical reluctance toward instrumentation due to infection risk
- Ongoing discussion if fusion surgery is necessary

PICOS

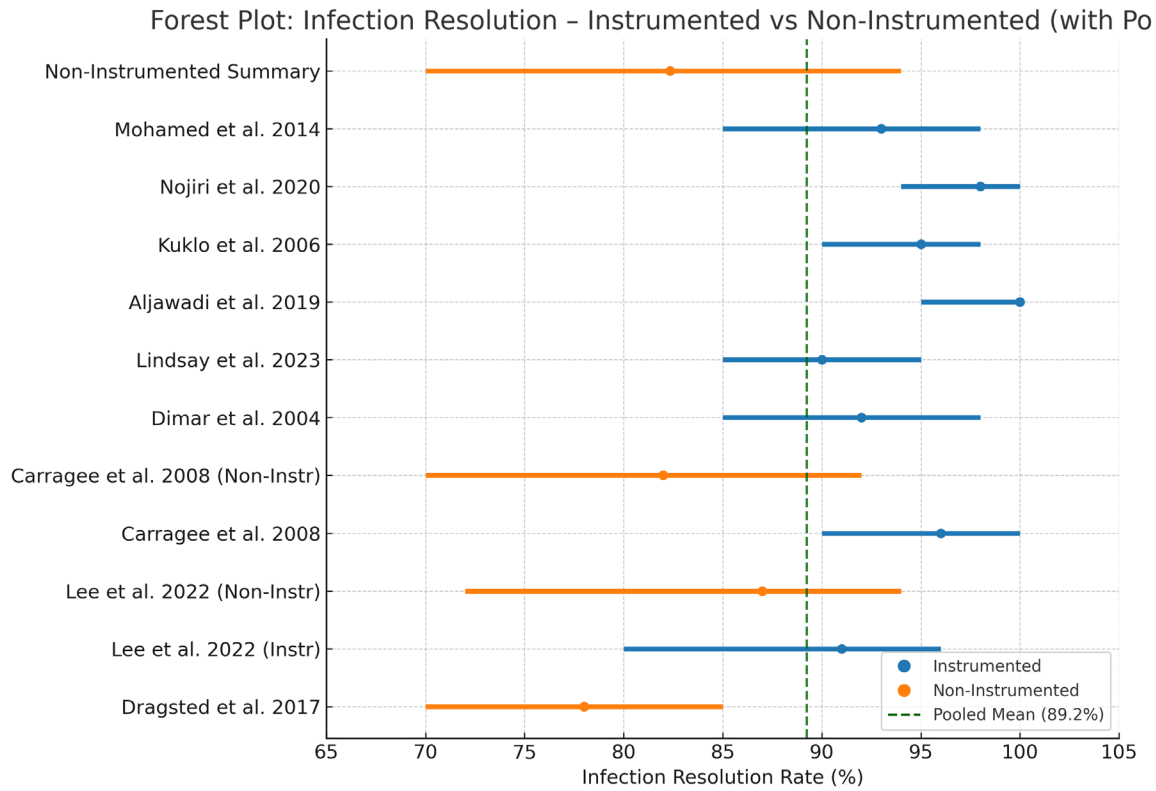
- **Population:**
  Adults (>18y) diagnosed with pyogenic spinal infections (e.g., vertebral osteomyelitis, discitis, epidural abscess)
- **Intervention:**
  Surgical spinal fixation or instrumentation (e.g., pedicle screws, rods, other stabilization devices)
- **Comparison:**
  Surgery without fixation or conservative treatment
- **Outcomes:**
  1 Resolution of infection
  2 Change in Pain w/o fixation
  3 Spinal Alignment
- **Study Design:**
  Randomized controlled trials, prospective or retrospective cohort studies, case-control studies, and case series with a sufficiently large sample (10 patients).

PICOS Element	Inclusion Criteria	Exclusion Criteria
Population	Adults with confirmed pyogenic spondylodiscitis (native infection, thoracic/lumbar spine)	Non-pyogenic infections (e.g., TB, fungal); pediatric; post-operative (iatrogenic) cases
Intervention	Surgical treatment involving spinal instrumentation (anterior, posterior, or combined)	Studies without instrumentation; studies using only non-operative management
Comparison	Conservative treatment or non-instrumented surgery	Studies with no comparator or lacking a defined comparator
Outcomes	Infection resolution, spinal stability, neurologic improvement, hardware-related complications	Studies not reporting relevant clinical outcomes (e.g., pain only, no follow-up data)
Study Design	Retrospective or prospective cohort studies; case series with ≥10 patients; clinical trials if available	Case reports or small series (<10 patients); reviews, editorials, expert opinions, animal studies

PRISMA

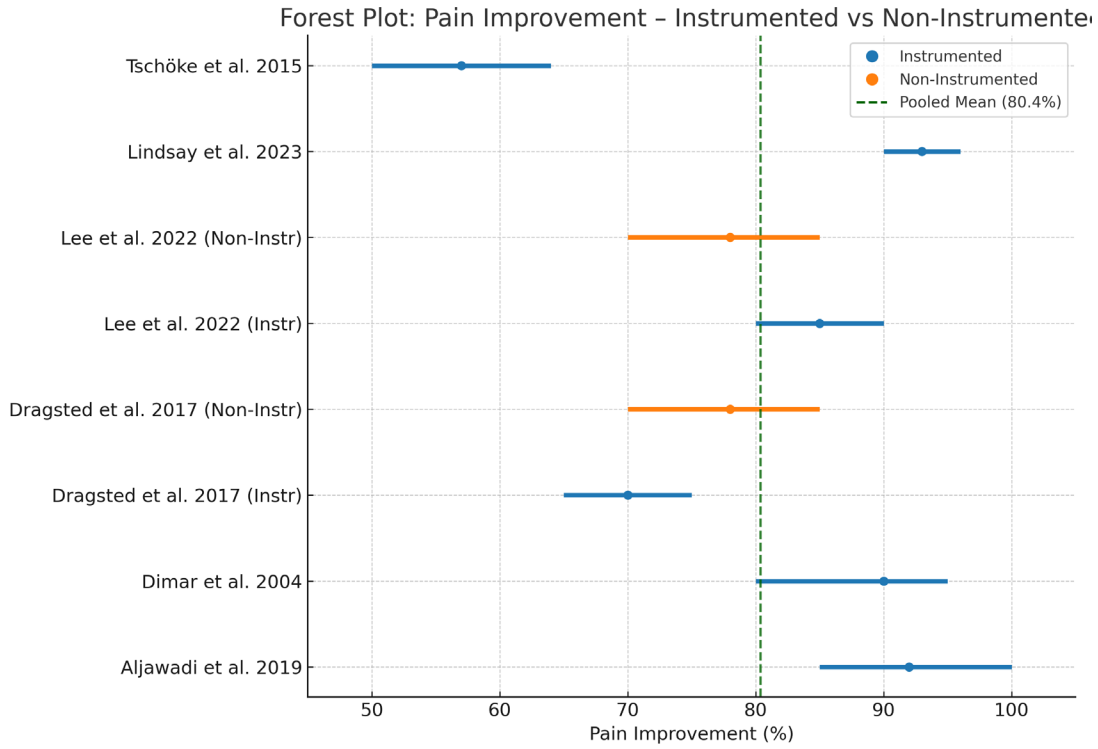

Identification of studies via databases and registers
Identification
Records identified from*:
Pubmed, Embase, Cochrane Databases (n = 3)
Records removed *before screening*:
Duplicate records removed (n = 169)
Screening
Records screened
(n = 877)
Records excluded**
(n = 768)
Reports sought for retrieval
(n = 109)
Reports not retrieved
(n = 0)
Reports assessed for eligibility
(n = 109)
Reports excluded:
Non Pyogenic (n = 21)
Case Report <10 pat (n = 26)
No outcome data (n = 33)
Included
Studies included in review
(n = 29)

Main Outcome Infection Resolution



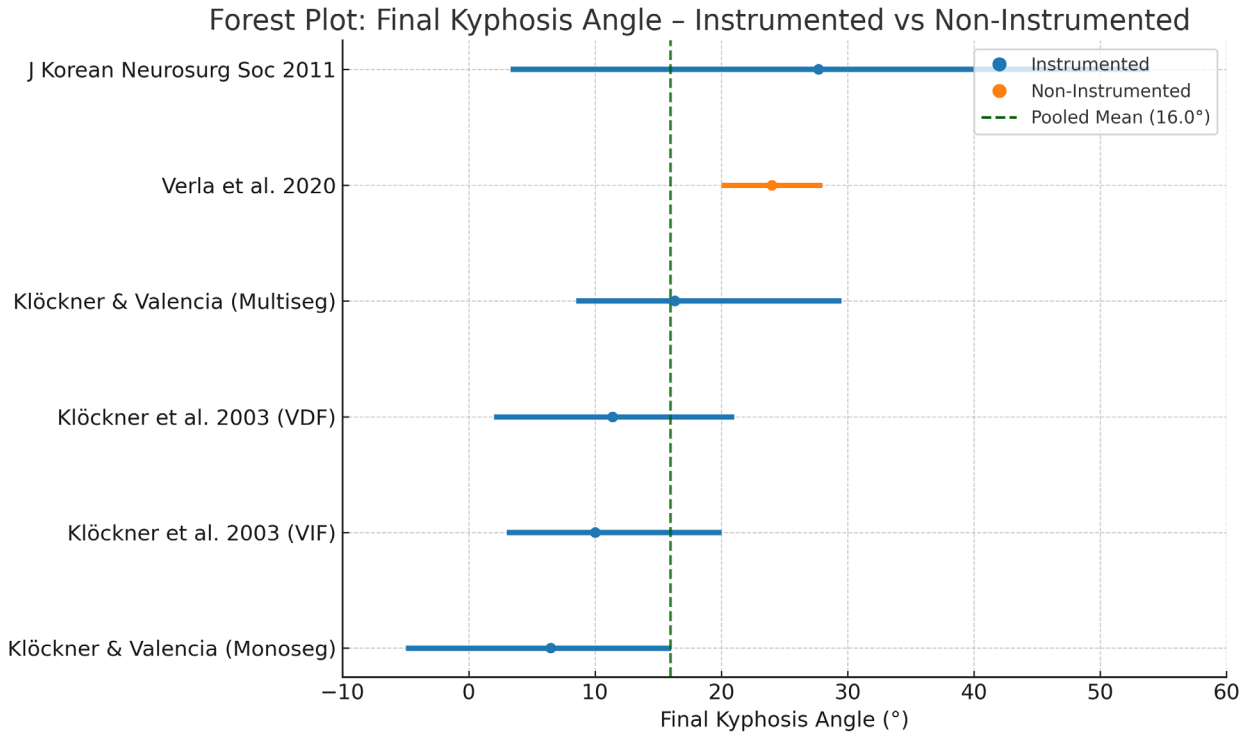
Study Group	Infection Resolution	Recurrence Rate
Non-Instrumented Surgery	70–90%	5–15%
Instrumented Surgery	85–98%	2–6%

Main Outcome Pain



Treatment Approach	**Pain Reduction at min 1y FU (%)**
Instrumented Surgery	85–95%
Non-Instrumented Surgery	70–85%

Main Outcome Spinal Alignement



Treatment Type	Final Kyphosis Angle (°)	Key Findings
Instrumented	6.5–27.7	Better alignment, especially in multisegmental or posterior+anterior constructs
Non-Instrumented	~24 (est.)	Limited data; risk of progressive deformity, 4/12 needed surgery

Question:

What are the available evidences for indications for spinal fixation in pyogenic spinal infections?

❖Response:

Spinal instrumentation is recommended in pyogenic spondylodiscitis when instability, neurological deficits, failure of medical therapy, or risk of deformity is present.

It improves infection resolution, pain relief, and spinal alignment — without increasing reinfection risk.

❖Vote:

Agree – 97.3%, Disagree – 0%, Abstain – 2.7%
(Unanimous Consensus)