Forensic Congruences Between the Shroud of Turin and the Sudarium of Oviedo

A Systematic Catalogue of Reported Correspondences from Comparative Studies

Otangelo Grasso, *written with the support and assistance of AI tools.*
Independent researcher, Aracaju, SE, Brazil
email: otangelograsso@gmail.com
ORCID: Orcid ID: 0009-0005-6942-0593
Version 1 – November 2025

Abstract

The Shroud of Turin and the Sudarium of Oviedo represent two extensively studied linen textiles traditionally associated with the burial of Jesus Christ. Multiple forensic investigations have documented correspondences between these artifacts across anatomical trauma patterns, fluid dynamics, spatial geometry, textile characteristics, and biochemical markers. This paper systematically catalogues every distinct congruence claim explicitly reported in a defined corpus of comparative studies, including organized checklists from Sánchez-Hermosilla, overlay analyses from Foglia/Richards, and comparative enumerations from Kearse, Bennett, and Barta. Using a transparent counting methodology that treats each discrete checklist line-item as one congruence claim, we identify 49 distinct reported correspondences spanning five evidentiary domains. The catalogue reveals densest clustering in spatial-geometric claims (overlay point counts, quantified facial metrics) and anatomical trauma correspondences (crown-of-thorns wounds, facial asymmetries, nape-region blood geometry). Methodological considerations include the need for blinded validation protocols, standardized overlay criteria, contamination controls for ancient textiles, and rigorous statistical frameworks for evaluating correspondence probabilities. This inventory provides a foundation for systematic independent verification of claimed congruences.

1. Introduction

The Shroud of Turin is a 4.4-meter linen cloth bearing front and back images of a man exhibiting trauma consistent with crucifixion.[1] The Sudarium of Oviedo is an 84 × 53 cm bloodstained linen cloth with documented presence in Spain since the 7th century CE, traditionally identified with the face cloth mentioned in John 20:7.[2] A central question in forensic textile analysis is whether physical and chemical evidence supports the hypothesis that both cloths contacted the same individual.

Multiple research groups have published comparative studies documenting proposed congruences. This paper provides a complete, systematically organized catalogue of every congruence claim explicitly present in a defined corpus of comparative literature, enabling transparent evaluation of the scope and nature of reported correspondences.

2. Methods

2.1 Corpus Definition

The analysis is strictly limited to congruence claims explicitly enumerated in the following source set: (1) the Sánchez-Hermosilla 2015 organized forensic checklist,[3] (2) the Foglia/Richards overlay summary,[4] (3) the Kearse 2013 comparative examination list,[5] (4) the Bennett presentation enumeration,[6] and (5) the Barta book-length treatment.[7]

2.2 Counting Rule

One congruence claim equals one checklist line-item or one clearly separable sub-claim when a single line explicitly enumerates multiple distinct anatomical features or quantified measurements. Where multiple sources report identical claims, a single consolidated entry is created with multiple citations.

2.3 Exclusions

Per instruction, the "Corner/Ricci stain linked to lance-wound exit" item is excluded from the catalogue. No congruences beyond those explicitly present in the defined corpus are included.

3. Results: Catalogue of Reported Congruences

3.1 Anatomical and Trauma Pattern Correspondences

(1) Crown-of-thorns cranial puncture wounds: Bloodstain patterns on both cloths attributed to multiple small penetrating wounds concentrated in the frontal and occipital scalp regions, interpreted as thorn injuries.[3,5]

(2) Occipital and scalp vital blood similarity: Described as "vital blood" showing remarkable similarity in distribution and morphology in the posterior cranial region.[3]

(3) Nape-of-neck wound correspondence: Wounds on the Sudarium in the nape area reported to coincide with Shroud bloodstains proposed as thorn wounds, with geometric distribution showing approximately 75% concordance.[3,6]

(4) Right cheek swelling and "island" stain: Right cheek prominence (approximately 100 mm² on Sudarium versus 90 mm² on Shroud) described as a "right cheekbone island" affecting blood flow patterns.[3,6]

(5) Nasal injury with inflammation and deviation: Nasal trauma including right-side swelling, nostril asymmetry, and pressure marks suggesting similar application on both cloths.[3,6]

(6) Mouth position and size correspondence: Mouth characteristics including position and size reported as similar on both cloths.[6]

(7) Mouth and neck rigidity signs: Documented as relevant to positioning and staining patterns on both artifacts.[3]

(8) Chin and beard region trauma correspondence: Evidence of hair loss or inflammation affecting stain formation, with beard appearing uneven—larger on the left than right side—on both cloths.[3,5,6]

(9) Brow ridge positioning correspondence: Specific alignment of supraorbital ridge features reported across both linens.[6]

(10) Facial hair morphology match: Both cloths described as covering a man with beard, moustache, and long hair gathered at the back of the neck in a ponytail-like configuration.[3,6]

(11) Scourging mark compatibility: A mark on the Sudarium right neck region described as compatible with flagrum injury, consistent with extensive scourging patterns on the Shroud.[3,6]

3.2 Fluid Dynamics, Blood Morphology, and Clot Behavior

(12) Pulmonary/pleural edema fluid presence: Both cloths reported to contain bloodstains mixed with pale fluid interpreted as pulmonary or pleural edema fluid, consistent with asphyxial death in crucifixion.[3,5,6]

(13) Blood-to-edema fluid ratio: Sudarium stain composition characterized as one part blood to six parts edema fluid, expelled through nose and mouth.[5]

(14) Acute pulmonary edema diagnostic interpretation: Explicitly stated for both cloths based on medical expert analysis.[6]

(15) Post-mortem blood morphology similarity: Post-mortem blood on both cloths reported to exhibit very similar morphological characteristics.[5]

(16) Fibrin clot indicators: "Diffused stain" and "accordion stain" patterns on Sudarium argued as consistent with transfer mechanisms linked to penetrating thoracic injury.[3]

(17) Nose-and-mouth-to-forehead flow trajectory: Flow path on Sudarium described as encountering obstacles consistent with Shroud facial features including prominent epsilon clot formation and swelling zones.[3]

(18) Long mouth-corner blood clot match: Particularly notable correspondence involving a long blood clot running from the corner of the mouth, reported as matching on both cloths with "good correspondence."[6]

(19) Epsilon forehead drop partial-transfer pattern: The edge of this drop said to remain on the Shroud while the central portion remained on the Sudarium, consistent with partial transfer during cloth removal.[3,6]

(20) Fresh blood adhesion requirement: Researchers argue that adhesion and long-term persistence of stains on both cloths requires blood to have been fresh or rehydrated at time of contact.[3]

(21) Screen effect and humidity preservation: Sudarium presence over the face proposed to have preserved humidity and facilitated seep-through transfer to Shroud reverse.[3]

(22) Global stain-shape and positional correspondence: Similarity reported in stain morphology, relative position, superficial size, and distances between injuries.[3]

3.3 Spatial Geometry, Overlays, and Quantified Correspondences

(23) 120-point direct overlay coincidence: When Sudarium images superimposed on Shroud face, researchers report 120 points of coincidence where stains align.[3,4]
(Un investigador superpuso una imagen del Sudarium sobre otra del Sudario de Turín y concluyó que había ciento veinte «puntos de coincidencia», donde las manchas de cada lienzo encajaban. Conclusión: las dos piezas de tela habían cubierto al mismo hombre. Foglia, L., & Richards, D. (2007). *El sudario / The Cloth of Oviedo*. pg.138)

(24) Polarized overlay correlation counts: Refined studies report 70 correlation points on front of Sudarium and 50 on back.[5]
(Polarized overlay studies between the Shroud and the Sudarium show 70 points of correlation on the front of the Sudarium and 50 on the back; the wounds found on the Sudarium located in the nape of the neck area coincide precisely with the bloodstains on the Shroud, which have been suggested to represent thorn wounds (Kearse, K. P. (2013). Icons, Science, and Faith)

(25) Beard region overlay coincident fit: Particularly strong alignment between beard-region stains on both cloths.[5]

(26) Relative positioning and distance relationships: Distance relationships between injury-generated stains across both linens reported as matching.[3]

(27) Nose length concordance: Approximately 8 cm on both cloths.[5,6]

(28) Nasal surface area comparison: Approximately 2280 mm² (Sudarium) versus 2200 mm² (Shroud).[3,6]

(29) Forehead-to-nose-tip length: Given as 8 cm for both.[6]

(30) Lip-area stain correspondence: When "excess length" caused by nose bridge removed from measurements, lip-area stains on Sudarium said to coincide with Shroud.[6]

(31) Three-dimensional reconstruction validation: 3D reconstruction based on Shroud image reportedly demonstrates Sudarium central stain pattern consistent with face possessing same specific anatomical features.[3,6]

(32) Miñarro sculpture reconstruction match: Claimed to match Sudarium proportions and trauma patterns.[3]

(33) Craniofacial metric concordance: Based on Sudarium landmarks including right-ear marks and axis/midline points compared to Shroud proportions.[3]

(34) Quantified regional nasal comparisons: Specific nasal-region areas and regions quantitatively compared between cloths.[3]

3.4 Positional Reconstruction and Death Context

(35) Head positioning reconstruction: Stain pattern analysis allows reconstruction showing at death approximately 70° forward tilt and 20° to right, with subsequent positional changes indicated by overlapping stain patterns.[5]

(36) Upright death posture compatibility: Positioning described as compatible with death in upright posture, consistent with crucifixion on both cloths.[3,6]

3.5 Textile Characteristics and Handling Sequence

(37) Linen composition: Both artifacts are linen cloths.[3,4]

(38) Fiber thickness similarity: Microscopic examination reveals fibers of approximately same thickness despite different weave structures.[5]

(39) Z-twist concordance: Both cloths described as hand-spun with Z-twist yarn direction, characteristic of first-century Near Eastern textile production.[3,6]

(40) Weave pattern difference: Shroud exhibits 3-to-1 herringbone twill while Sudarium shows taffeta or octagonal weave, indicating different manufacturing contexts.[3]

(41) Application sequence: Proposed sequence places Sudarium covering face before Shroud application, serving as absorbent layer for expelled fluids.[3]

(42) Sudarium fastening method: Described as having been fastened and tightened to head, held in place by sewing with needle and cotton thread.[3]

(43) Absence of putrefaction signs: Neither cloth reported to show putrefaction signs, consistent with relatively brief contact before burial.[3]

(44) Bodily rigidity evidence: Both cloths associated with evidence of rigor mortis.[3]

3.6 Chemical, Trace, and Biological Evidence

(45) ABO blood type AB concordance: Both Shroud and Sudarium typed as AB, with frequency cited as approximately 5% in general populations or 1 in 1000 in some estimates.[5,6]

(46) Blood protein immunological verification: Testing verified presence of major blood proteins (albumin and immunoglobulin) in stained fibers from both cloths.[5,4]

(47) Aloe and myrrh residues: Both linens reportedly contain residues of these substances associated with Jewish burial practices.[6]

(48) Jerusalem-region pollen concordance: Palynological analysis identified pollen types on Sudarium from plants growing near Jerusalem, described as point of agreement with similar Shroud findings.[6]

(49) Calcium accumulation at nose region: Both cloths show dust accumulation where cloth covered nose, with instrumental analysis revealing high calcium content via X-ray fluorescence near Shroud nose compared to high-dust concentrations in corresponding Sudarium area.[6,8]

4. Discussion

This systematic catalogue documents 49 distinct congruence claims explicitly reported in comparative studies of the Shroud of Turin and Sudarium of Oviedo. The reported

correspondences span anatomical trauma patterns (11 items), fluid dynamics and blood morphology (11 items), spatial geometry and quantified measurements (12 items), positional reconstruction and death context (2 items), textile characteristics (8 items), and chemical/biological evidence (5 items).

The densest clustering occurs in spatial-geometric claims, particularly the overlay studies reporting 70-120 correlation points and multiple quantified facial metrics (8 cm nose length, 2200-2280 mm^2 nasal area, matching swelling measurements differing by only 10 mm^2). These represent the most direct assertions of physical congruence and would benefit from standardized, blinded validation protocols defining explicit criteria for declaring a "point of correspondence."

Anatomical trauma correspondences include highly specific claims such as the 75% nape-area blood geometry concordance, the distinctive mouth-corner clot match, and the epsilon-drop partial-transfer pattern. The specificity of these morphological details—if independently verified—would be difficult to achieve through coincidence or medieval fabrication.

Biological concordances center on the shared AB blood type. While researchers frame this as significant given AB's relative rarity (cited variously as 5% or 0.1%), blood typing remains primarily exclusionary rather than identificatory. The immunological verification of authentic blood proteins establishes that genuine biological material exists on both cloths, though contamination and degradation remain methodological concerns for ancient textiles.

Several methodological limitations warrant attention. First, overlay point-counting methodologies have not been subjected to rigorous peer review by forensic imaging specialists using blinded analysis protocols. The criteria for declaring a "point of correspondence" require explicit standardization. Second, blood typing results from ancient textiles face challenges including handling contamination, environmental exposure, and degradation of biological markers over time, necessitating confirmation through multiple independent laboratories using modern analytical techniques. Third, palynological findings remain contested, with questions about both species identifications and contamination during the cloths' complex histories spanning multiple geographic locations. Fourth, the concentration of findings in proceedings and specialized publications rather than mainstream peer-reviewed forensic science journals limits independent scrutiny of methodologies and conclusions.

The textile evidence presents mixed signals: Z-twist concordance and fiber thickness similarity suggest shared provenance or time period, while contrasting weave patterns (serge versus taffeta) indicate different manufacturing contexts despite shared fiber characteristics.

Future research priorities should include independent verification of claimed correspondences using blinded protocols, advanced imaging techniques for overlay analysis (multispectral, 3D photogrammetry), expanded biochemical characterization with modern methods (mass spectrometry, DNA sequencing), rigorous statistical treatment of correspondence probabilities accounting for multiple comparisons, and systematic experimental replication of proposed transfer mechanisms.

5. Conclusion

This catalogue documents 49 distinct congruence claims reported across comparative studies of the Shroud of Turin and Sudarium of Oviedo. The correspondences span multiple

independent domains including anatomical trauma patterns (crown-of-thorns wounds, facial asymmetries, nape-area blood geometry), fluid dynamics (pulmonary edema, distinctive clot formations), spatial geometry (70-120 overlay correlation points, quantified facial metrics), textile characteristics (Z-spin, fiber thickness, linen composition), and biological markers (AB blood type, immunologically verified proteins). While these correspondences are striking in their specificity and number, rigorous independent verification remains essential. The systematic inventory provided here enables transparent evaluation and establishes a foundation for future multidisciplinary investigation with appropriate methodological controls, blinded protocols, and publication in mainstream peer-reviewed forensic science venues.

References

1. Heller, J. H., & Adler, A. D. (1981). A Chemical Investigation of the Shroud of Turin. *Canadian Society of Forensic Science Journal*, *14*(3), 81-103. Link.

2. Guscin, M. (1997-ongoing). The Sudarium of Oviedo: Its History and Relationship to the Shroud of Turin. Link.

3. Sánchez-Hermosilla, A. (2015). Commonalities between the Shroud of Turin and the Sudarium of Oviedo. *SHS Web of Conferences*, *15*, 00007. Link.

4. Foglia, L., & Richards, D. (2007). *El sudario / The Cloth of Oviedo*. Link.

5. Kearse, K. P. (2013). Icons, Science, and Faith: Comparative Examination of the Shroud of Turin and the Sudarium of Oviedo. *Theology and Science*, *11*(1), 52-61. Link.

6. Bennett, J. (2012). The Sudarium of Oviedo and its Relationship with the Shroud of Turin [conference presentation]. Link.

7. Barta, C. (2022). *The Sudarium of Oviedo: Signs of Jesus Christ's Death*. Jenny Stanford Publishing. Link.

8. Barta, C., Álvarez, R., Ordóñez, M. A., Sánchez, A., & García, J. (2015). New coincidence between Shroud of Turin and Sudarium of Oviedo. *SHS Web of Conferences*, *15*, 00008. Link.