2025

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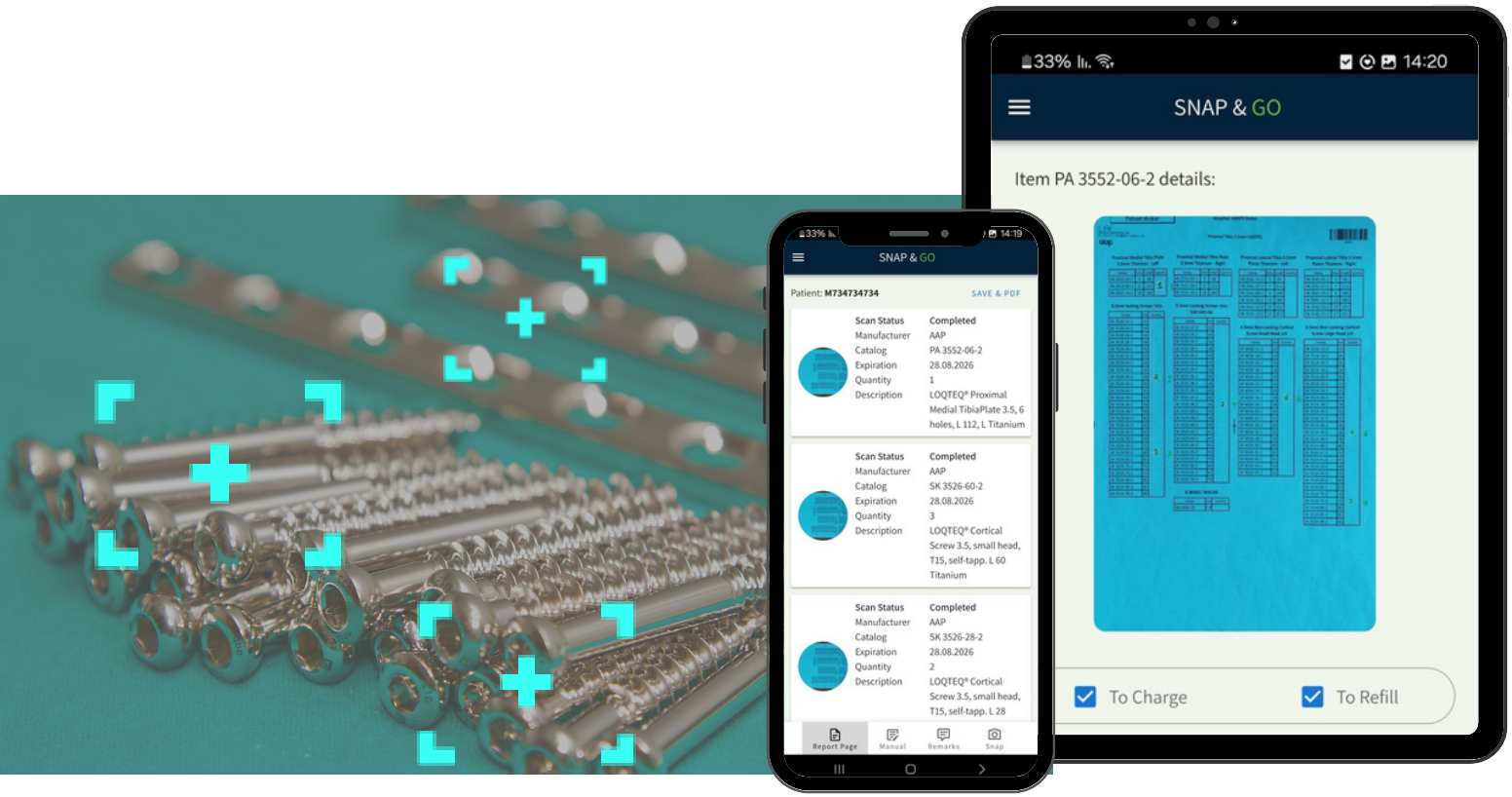
The Value of **Computer Vision and AI** in a Complex Orthopedic Surgery



Background:

In a complex, high-cost orthopedic elbow surgery at a large hospital network in the US, Snap&Go, an AI-powered computer-vision camera, was benchmarked against standard perioperative documentation in a leading EHR.

The case, drawn from a regional academic network, was designed to evaluate AI computer vision for perioperative documentation in an expensive, implant-dense elbow procedure performed under routine conditions with manual implant count sheets. Inventory included both consignment and hospital-owned stock.

The objective was to compare documentation completeness, accuracy, and financial fidelity between the EHR workflow and Snap&Go in the same procedure, and to assess whether camera-based capture delivers materially better recording of implant and med-surg utilization, superior lot/expiry completeness, and clearer financial traceability.

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Methodology:

During routine documentation, the OR team used the EHR's standard charge-capture tools (pick lists/barcode scans), implant logs, and charge rules.

In parallel, a designated RN team recorded all chargeable implants and consumables with the Snap&Go device positioned at the point of use.

Post-case analyses included: Line-item reconciliation, Catalog-level matching, Charge valuation, Data integrity, and completeness checks (lot and expiration capture).

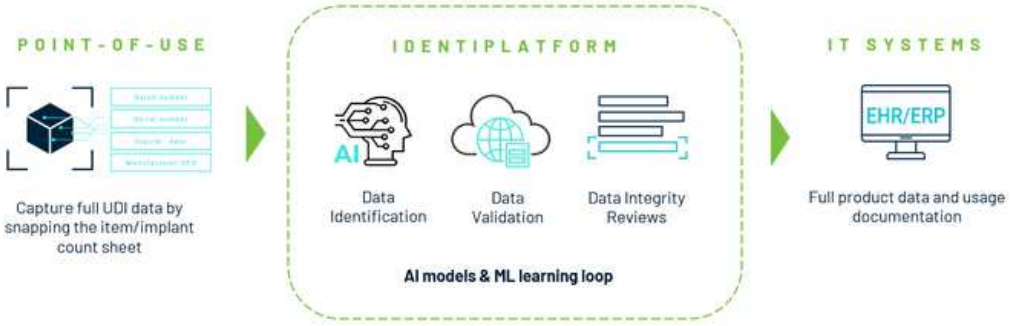
Key Findings:

1. Bill-Only high-value implants and item-master gap

Snap&Go captured 127.08% more chargeable value than the EHR, indicating material revenue exposure. The dominant driver was two Smith & Nephew EVOS plates - $900 each - recorded only by Snap&Go and corroborated by a vendor count-sheet completed by the OR team and imaged by the Snap&Go camera.

These implants, approximately 60% of the case value, were bill-only items. With no manufacturer catalog number onboarded in the EHR item master, they were not selectable and therefore not billed. **The missed charges total $1,800.**

Notably, several days post-op, the items still had not been added to the EHR record, a significant reconciliation/governance red flag.



2. EHR Misdocumentation and Item value gap

The EHR contained two misdocumented items; the assumption is that human error was involved (wrong selection/SKU errors), which undermines claim accuracy and may impact the ability to obtain full reimbursement.

The size captured in the Snap&Go reflects a 15% higher item value. Snap&Go provided corroborating evidence - a handwritten vendor count-sheet image and a time-stamped device record - which indicates that this mismatch in the EHR documentation could potentially undermine claim accuracy and the hospital's claim credibility.

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3. Med-surg under-documentation

Med-surg consumables, such as a skin stapler, Ioban, NaCl irrigation, and an irrigation set, **representing approximately 18-21% of this case's value, were missing from the EHR record.**

Root causes include reliance on manual pick lists/barcode scans and implant-centric preference cards, while these items are typically stocked via SPD/distributor channels rather than vendor implant trays.

In contrast, Snap&Go captured these lines consistently at the point of use, with complete lot/expiry where applicable, closing the transparency gap and enabling accurate, actual-use case costing, improved costing fidelity, and reduced charge variability.

4. Data completeness gap

To audit the integrity of item data, we defined completeness as having both lot/batch and expiration fields populated for each item. Snap&Go recorded these identifiers on nearly 100% of captured items, with image-backed label evidence at the point of use. In cont**rast, the EHR export included lot/expiry on only 10.5% of items, leaving most entries blank,** consistent with manual pick/scan workflows and implant-centric preference cards.

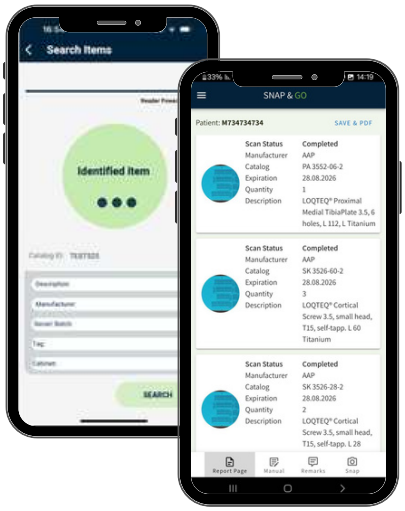
This completeness gap directly affects UDI traceability, recall readiness, audit defensibility, shelf-life management, and cost–charge reconciliation, with Snap&Go providing the materially stronger data trail.

Conclusion

In this complex elbow case, AI computer vision documented more of what matters than the EHR, including high-value implants that were bill-only and not yet onboarded in the item master, complete lot/expiry identifiers, and med-surg consumables that manual workflows often miss.

The result is stronger revenue capture, cleaner and more defensible claims, better UDI/recall traceability, and truer procedure-level costing.

The gaps trace to item-master setup deficiencies, the inherent difficulty of bill-only capture (non-onboarded SKUs aren't selectable), manual pick/scan friction, and consignment onboarding delays. The evidence speaks for itself.



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Interested in learning more about how IDENTI's computer vision technology transforms charge capture and revenue reconciliation?

Our experts are here to assist you.

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IDENTI provides hospitals, medical device manufacturers and logistics companies with AI-driven, patent-protected data-capture solutions to create a real-time account of medical inventory and consumption. The unique combination of autonomous end-devices, intelligent software, a raw database, and seamless connectivity, revolutionize financial efficiency, increase patient safety, and solve health management challenges at the point-of-use.

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