

Table 1. Characteristics of included studies

Author, year	Study design	Inclusion criteria	Intervention	Comparator	N
PICO 1: Innovative counting methods vs. standard counting protocol					
Kaplan, 2022	Multicenter pre-test post-test, retrospective analysis	All events reported in the event reporting system coded as unintended retention of a foreign object after surgery or invasive procedure in the OR from 5 large teaching hospitals	Implementation of TeamSTEPPS training protocol (training in team structure, communication, leadership, situation monitoring and mutual support) and RF detection technology. Pads and sponges were embedded with a RF identification chip, and detection methods included a hand-held wand or OR table detection mattress.	Before the intervention period	997,237 operations
Steelman, 2019	Retrospective Observational quantitative comparison study	Operative and other invasive procedures	Implementation of low frequency RF surgical sponge detection system	Pre-intervention period, manual count alone	13,322 operations
Primiano, 2020	Quality improvement, retrospective observational quantitative comparison study	Adult patients (>18 y) who underwent surgery in the medical center's main OR.	RF technology with wand used after first manual count. Sponges were embedded with RF-detectable microchips.	Two years before intervention period	38,485 cases
PICO 2: All other interventions except for counting vs. standard counting protocol					
Cima, 2011	Single-center RCT	Patients undergoing an elective weekday procedure in cardiovascular surgery or colon and rectal surgery	Data-matrix coded sponge system, where the sponges are scanned at the end of the procedure.	Standard visual and audible sponge count	87,404 operations
Greenberg, 2008	Single-center RCT	Patients undergoing elective, weekday procedure in a general surgery OR	Bar-coded sponge system (SurgiCount Medical) with hand-held detection method	Standard manual sponge counting protocol	300 operations

RCT: randomized controlled trial, RF: radiofrequency, RSI: surgical item, retained OR: operating room