

### Resistance Phenotypes of Bacterial Strains Isolated from Patients Admitted to Surgical Wards

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### Abstract

**Background/aim:** This study aims to identify resistance phenotypes within the Plastic Surgery Department of a tertiary hospital in Romania. The goal is to guide the appropriate administration of antimicrobial therapy to optimize patient outcomes while minimizing the risk of multidrug-resistant bacterial strain development.

**Methods:** A prospective clinical study was conducted on 78 patients admitted to the Plastic Surgery Department. Pus samples were collected by attending physicians. Bacterial culture and identification using API cards were conducted. Antibiotic susceptibility testing was performed through the Kirby-Bauer disk diffusion method.

**Results:** A total of 100 bacterial strains were isolated from 78 clinical samples. The most frequently identified strains were: *Staphylococcus aureus* (32%), *Klebsiella pneumoniae* (21%), *Escherichia coli* (10%), *Proteus mirabilis* (10%), and *Pseudomonas aeruginosa* (10%). Among these, 20% of *Escherichia coli* and 28.5% of *Klebsiella pneumoniae* strains exhibited an extended-spectrum beta-lactamase (ESBL) phenotype. Resistance to fluoroquinolones was observed in 23.8% of *Klebsiella pneumoniae* and 10% of *Escherichia coli* strains. Aminoglycoside resistance was detected in 30% of *Escherichia coli* and 71.5% of *Klebsiella pneumoniae* strains. Analysis of *Pseudomonas aeruginosa* isolates revealed resistance to carbapenems – namely imipenem (40%), cephalosporins (50%), and

fluoroquinolones (20%). *Staphylococcus aureus* strains were classified into different phenotypes, including methicillin-resistant *Staphylococcus aureus* (62.5%), beta-lactamase producers (37.5%), aminoglycoside-resistant (78.1%), and fluoroquinolone-resistant strains (18.8%).

**Conclusion:** The findings highlight that the bacterial strains identified in this study demonstrated a high level of susceptibility to fluoroquinolones, suggesting their potential efficacy in antimicrobial therapy.

**Keywords:** bacteria, antibiotic resistance, antibiotic stewardship, surgical wound infection, fluoroquinolones, plastic surgery