Imperial College Healthcare NHS Trust

ANTIBIOTIC PROPHYLAXIS FOR ARTERIOVENOUS FISTULA SURGERY

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Introduction

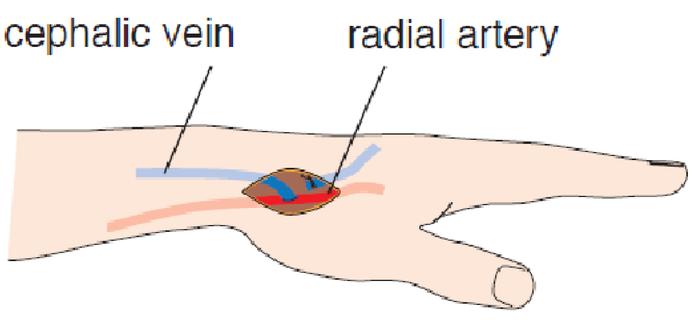
Infection is a major source of morbidity and mortality in end stage renal failure. These patients are inherently more susceptible to infection and often have comorbidities which compound this such as diabetes[1].
Infection at a fistula site can be serious with associated fistula failure, sepsis and haemorrhage resulting.
At our institution, guidelines recommend prophylactic ciprofloxacin and flucloxacillin pre-operatively for the creation of an arteriovenous fistula (AVF). Optimum use of antibiotics saves time, money and avoids drug resistant bacteria developing in these high risk patients. We observed the frequency of postoperative infections after AVF surgery and examined the effect of antimicrobial therapy on the development of infections.

HOSPITAL GUIDELINES

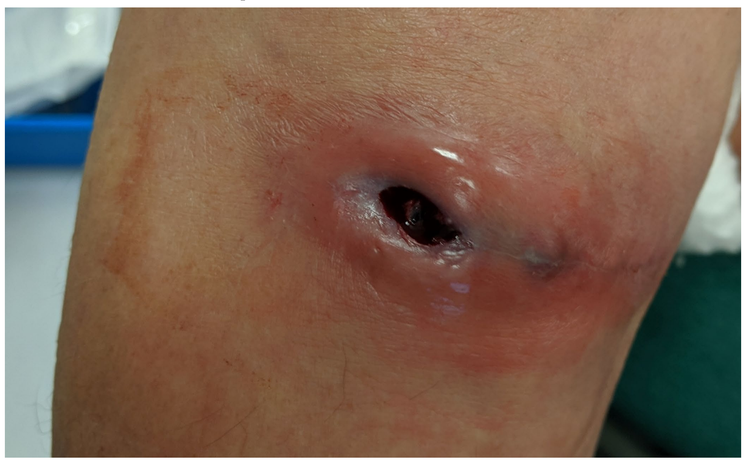
Flucloxacillin 500mg oral STAT PLUS Ciprofloxacin 250mg oral STAT
(if penicillin allergic or MRSA positive give vancomycin STAT dose as above instead)

Methods

This was an observational, retrospective study performed at a single institution over a 12 month period from May 2018-2019. Consecutive patients undergoing surgery to create an AVF were included. We excluded patients who had an exploration procedure only with no fistula created. Data was extracted from electronic hospital records including: demographics, comorbidities, skin preparation, type of fistula, antibiotics and post-operative complications. Patients were followed up for a minimum of 6 weeks to a maximum of 1 year.



Fistulas created = 290
Primary failure rate = 14%
Infection rate = 4%



Results

Over the 1 year period, 290 fistulas were created in 268 patients since some patients underwent more than one operation. The mean age was 60 years and 70% of patients were male. Antibiotic prophylaxis was administered in 197 cases (68%), with 189 (65%) of these receiving dual antibiotics in line with trust guidelines.
12 patients (4%) developed an infection. Infection rates were higher in those who received prophylaxis compared to those who received no antibiotics, but this difference was not significant (10/197 [5.1%] vs 2/93 [2.1%] respectively, OR 2.4 95% CI 0.52-11.34, p=0.26).
Patients received either chloroprep or povidone iodide skin preparation depending on consultant preference. Hair removal rates also different depending on site of surgery and consultant preference.
Culture results were obtained for 6 patients with staphylococcus aureus and streptococcus viridans organisms grown. Of the patients with infections 6 had radiocephalic, 3 had brachiocephalic and 3 had brachiobasilic fistulas created. For all patients the types of fistulas created were: radiocephalic 67/290 (23%), brachiobasilic 190/290 (66%), brachiobasilic 33/290 (11%).
The primary failure rate for all procedures, defined as failure <3months was 14% (42/290) with 2/12 failures in patients with surgical site infection.

Conclusion

Overall infection rates for arteriovenous fistula creation over 1 year are low at 4%.
There was no significant difference in infection rates between those receiving antibiotics and those who did not.
The findings are in agreement with a growing consensus that routine antibiotic prophylaxis in clean surgery may not reduce infection risk.
The study is limited by a small number of patients and we intend to collect further data for several years to contribute to better evidence based practice in our unit.

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https://www.saveyourvein.org

Clean surgery: An uninfected operative wound in which no inflammation is encountered and in which the respiratory tract, alimentary, genital, or uninfected urinary tracts are not entered.

1. Wang HE, Gamboa C, Warnock DG, Muntner P. Chronic kidney disease and risk of death from infection. *Am J Nephrol*. 2011;34(4):330–336. doi:10.1159/000330673