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Letter to the Editor

Antibiotic prophylaxis in inguinal hernia surgery[☆]



Profilaxis antibiótica en la cirugía de la hernia inguinal

We read with great interest the consensus document recently published in your journal about antibiotic prophylaxis in surgery. The full text of the hernia section of that consensus document refers to risk factors for surgical site infection (SSI), and recommends their use “if there are risk factors such as relapse, advanced age, immunosuppression, drains or if prolonged operative duration is anticipated.” However, the authors conclude that “given the difficulty of predicting some of the risk factors in the preoperative period, prophylaxis is recommended in open groin herniorrhaphy and hernioplasty.”¹

We believe that risk factors related to hernia (bilateral or recurring) are diagnosed in practice through physical examination and recorded in the medical history and, in particular, the type of hernia should be coded in the surgery request registry before patients are added to surgery waiting lists at hospitals.

The latest International Guidelines for Groin Hernia Management indicate that there are few data for drawing conclusions on the usefulness of antibiotic prophylaxis with patients with immunosuppression or diabetes. However, in settings/regions where the infection rate is high, its use is recommended.²

Spain is considered a high surgical risk region² along with Pakistan, Turkey, parts of India and Japan. This designation is rooted in an inconclusive study conducted by Celdran et al.³ in 2004 with 100 patients, which was suspended due to the high rate of infection in the placebo group (8.1%) versus the absence of infection in the group that received prophylaxis with cefazolin, with differences approaching significance ($p = 0.059$). However, studies such as the one conducted by Morales et al.⁴ in 2000, using a single antibiotic in a randomised, double-blind clinical trial with a total of 524 patients, were unable to demonstrate that administration of antibiotic prophylaxis protected against the development of SSI, even though they considered it necessary to stratify patients by surgical risk and avoid the generalised use of antibiotics.

In 2003, Romero et al.⁵ conducted an interventional study in 425 non-randomised patients that compared cefuroxime 1.5 g to placebo in primary or recurring groin hernia surgery. The control group made up of 218 subjects presented a rate of SSI of 0.45% ($n = 1$) versus the placebo group ($n = 207$) with an incidence of 0.48% ($n = 1$), with no statistically significant differences. Despite the study's lack of randomisation, the authors concluded that there was insufficient evidence for systematically recommending antibiotic prophylaxis in patients with no risk factors who are to undergo hernioplasty.

At the same time, Oteiza et al.⁶ published a randomised prospective study comparing preoperative administration of amoxicillin/clavulanic acid 2 g versus a group with placebo. There was only one case of SSI in a patient who had received antibiotic prophylaxis, and no differences between groups were observed. Therefore, the authors did not support the use of antibiotic prophylaxis in groin hernia surgery when prosthetic material is used.

The latest Cochrane review, signed by Orelia et al., concluded that antibiotic prophylaxis in elective groin hernia surgery cannot be universally recommended. It likely reduces all types of infection (superficial and deep) in settings with a high risk of infection, but there are no differences or minimal differences in those with a low risk. In addition, it appears to have effect no (or minimal) preventive effect on deep infection, regardless of the setting.⁷

For all of the above reasons, we believe that the generalised use of prophylaxis in open groin hernia surgery will lead to overuse of antibiotics. Given that the risk factors discussed (bilateral or recurring hernia and advanced age) can be readily identified in a patient's medical history, it is possible to reduce its use and thus decrease costs, risks for the patient (possibility of adverse reactions or anaphylaxis and *Clostridium difficile* infection) and the selection of resistant micro-organisms.^{8,9}

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Reply to “Antibiotic prophylaxis in inguinal hernia surgery”[☆]



Respuesta a «Profilaxis antibiótica en la cirugía de la hernia inguinal»

We are grateful for the authors' comments on antibiotic prophylaxis in inguinal hernia surgery¹ in relation to the recommendations made in the Executive Summary of the Consensus Document from the Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica (SEIMC) [Spanish Society of Infectious Diseases and Clinical Microbiology] and of the Asociación Española de Cirujanos (AEC) [Spanish Association of Surgeons] on antibiotic prophylaxis in surgery published in EIMC, and² because the discussion of these controversial aspects deepens our knowledge.

It is true that generalisation of the use of prophylaxis in open surgery for inguinal hernia may lead to an excess use of antibiotics, and so antibiotic prophylaxis must be individualised depending on the risk for each patient, as discussed in the introduction of the consensus document.²

In the full online version of the document (doi:10.1016/j.eimc.2020.02.017)² we argued the use of prophylaxis in hernia surgery as follows: “There is controversy about prophylaxis in hernia surgery due to the contradictory results of various meta-analyses. Since 2007, various meta-analyses have discovered a protective effect of prophylaxis in open hernioplasty. In 2016, another meta-analysis advises against routine prophylaxis, but finds that it is indicated if there are risk factors such as recurrence, advanced age, immunosuppression, drainage or if a prolonged surgical time is anticipated. A meta-analysis in 2017 demonstrated the superiority of cefazolin and beta-lactams/beta-lactamase inhibitors over placebo with a single preoperative dose, but not with cefuroxime and fluoroquinolones, with no differences between each of the antimicrobials used. Regarding the laparoscopic route, several studies have obtained significantly lower rates of surgical site infection (SSI). There is also a lower rate with the laparoscopic route in incisional hernia or eventration. The European Association for Endoscopic Surgery (EAES) believes that there is no evidence to support the routine use of prophylaxis in laparoscopic hernioplasty and the European Hernia Society (EHS) believes that in this case the NNT goes to infinity. Based on the available evidence and given the difficulty of predicting any of the risk factors in the preoperative period, prophylaxis is recommended in open inguinal hernioplasty and herniorrhaphy and in the rest of abdominal hernioplasties (by implication from the evidence in inguinal hernia).”

We all agree that, for a clean, scheduled surgery, in a young patient with no risk factors, where a surgery duration of 20 min is expected, antibiotic prophylaxis would not be required. It is true that some risk factors (bilateral or recurrent hernia, advanced age, diabetes, obesity) can be detected during the preoperative visit, and

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although the surgical time cannot be predicted, it can be estimated based on these factors. In addition, the impact of infection in the presence of a prosthesis must be taken into account. Only for this would it be indicated, above all in the presence of risk factors given the possibility of having to remove it.

In the meta-analysis by Erdas et al. referred to by the authors³ the use of prophylaxis is discouraged because there is only a decrease in the incidence of superficial and non-deep infections. They excluded studies in which laparoscopic surgery, herniorrhaphy without prosthesis placement, emergency surgery and children were involved. They also excluded two “outliner” studies that favoured the use of prophylaxis; one because an older population with diabetes was included, and the surgery was mostly performed by residents⁴ and the other because the interventions were performed by residents (100%), frequently left drainage (22.3%) and average surgical time was longer (63 min).⁵

The works by Morales et al.⁶ and Oteiza et al.,⁷ with some methodological limitations include a young population, with a mean age of 54.4 and 57.1 years respectively, a mean surgery time of 34 and 40 min, respectively, an ASA I-II in the majority of the cases, without referring to other risk factors or obesity. Interventions are performed by experienced surgeons, the use of drainage and recurrent hernias are excluded (only 7% in Morales et al.) and bilateral.

A prospective record conducted in Germany, Austria and Switzerland between 2009 and 2014, which included 85,033 procedures (56.7% laparoscopic), in which antibiotic prophylaxis was administered in 71.54%, found in the subgroup of open surgery patients that SSI was independently associated with not receiving surgical antibiotic prophylaxis, to the ASA index (the higher the index, the greater the risk) and the size of the hernial sac.⁸

Therefore, with current data, antibiotic prophylaxis cannot be discouraged in open surgery with mesh implant, especially in the presence of risk factors. Obviously, those centres with good adherence to preventive measures (not shaving, asepsis of the skin with chlorhexidine...) where the incidence of infections is very low in their surveillance programmes for surgical infection could do without it.

Conflict of interests

The authors declare that they have no conflict of interests.

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