of intra-coronary shunt with regard to left ventricular function, cardiac enzyme release have only been demonstrated during grafting of left anterior descending artery [4]. It has also been demonstrated that humidified gas insufflation compared with non-humidified gas insufflation, as used in our case, attenuated the endothelial injury [5]. Thus, it is not clear whether endothelial injury induced by insertion of intra-coronary shunt *per se* is less than that induced by the use of high-flow humidified CO_2 blower. Therefore, considering the rare occurrence of CO_2 embolism as reported in our case, we cannot advocate the routine use of intra-coronary shunt whenever CO_2 blower is used solely for the purpose of preventing CO_2 embolism unless the intra-coronary shunt was otherwise necessary. Yet, we agree with their opinion that intra-coronary shunt could be an option in selected cases when proximal soft snares are not feasible for the presence of previously inserted stent or calcium deposition when using a gas blower besides the usual indication of critical stenosis without well-developed collateral formation.

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doi:10.1016/j.ejcts.2009.10.009

Letter to the Editor

Clinical impact of surgical glues: interdisciplinary indications for its use

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Received 26 August 2009; accepted 26 October 2009; Available online 30 November 2009

Keywords: Tissue adhesives; Foreign body reaction; Adhesion energy

We want to congratulate Perrin and co-authors for their very interesting publication [1]. They describe a standardised experimental approach to approve the efficacy of surgical sealants. The experimental setting allows a quantification of adhesion of surgical glues. The average value of the practical adhesion energy of Dermabond® is 2.3 J m^{-2} with a standard deviation of 1.5 J m^{-2}. The results are interesting and, more important, of surgical interdisciplinary relevance. Our clinical experience with tissue glues shows that one should carefully evaluate the indication for its use. Superficial skin lesions in children are a perfect indication, as well as skin closure after abdominoplasty. In this context, the objective measurement of the practical adhesion energy is of great importance. Time efficiency and its painless use are additional indicators in these cases. Nevertheless, the use of Dermabond® may also lead to complications, such as infections and foreign-body reactions, as we have seen in the treatment of wounds of the upper extremity [2]. In particular, in cases of *in situ* use, the indication of using surgical glues should be discussed critically as the published results of clinical as well as experimental studies are not coherent [3,4].

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doi:10.1016/j.ejcts.2009.10.022

Reply to the Letter to the Editor

Reply to Dragu et al.

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Received 15 October 2009; accepted 26 October 2009; Available online 25 November 2009

Keywords: Surgical glue; Adhesion; Tissue joining; Clinical study; Experimental

Thank you very much for your interest in our work [1] on adhesion in the surgical field.

I fully agree with the surgical interdisciplinary relevance of surgical glues. They are used in numerous surgical

interventions in all fields of surgery. They have been studied by thousands of clinical studies. Recently, several papers have been published on the use of sealants in the treatment of air leakage, in plastic surgery, and for haemostasis. However, to be honest, clinical adhesion of surgical sealants is, most of the time, disappointing and must be improved.

As we have written in our article, there is a lack of fundamental studies. This approach is essential to improve these glues and to adapt them to the surgical field. Measurement of the practical adhesion energy will give us important information about the influence of the support of adhesion and of the environment. The humidity proportion, the temperature during adhesion and the pH of the surface must have a large function in the quality of the surgical adhesion. This is the next step of our study.

The industrial field has studied adhesion experimentally to develop glues with an impressive efficacy, which you can test around you everyday.

They obtained these results with the creation of a science which studies adhesion in different kinds of situation and which is able to create a polymer according to the needs. This field of fundamental sciences began studying bio-adhesion. In the skin area, a model wound is developed [2]. The mechanical behaviour of the skin and of the pericardium [3] has been studied. The nano-structuration of the surface of adhesion is a very promising work [4].

According to your opinion, indications must be evaluated carefully to assess the clinical efficacy and to study potential complications. Surgical sealants are expensive and must be used efficiently and cost-effectively. Therefore, we need independent and relevant clinical studies. There are several studies on sealants with a lack of a precise methodology, a limited number of patients and a relationship between company and the study. This type of study does not give any scientific evidence concerning the efficacy and a cost/benefit ratio of the surgical sealant in surgery. As Rocco et al. state in their conclusion, 'in the future, scientific societies may also offer the intellectual structure and the network of institutions necessary to ensure an impartial organization, performance and evaluation of clinical trials on the usefulness of sealants' [5].

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doi:10.1016/j.ejcts.2009.10.021

Letter to the Editor

Re: A prospective randomised study to assess the efficacy of a surgical sealant to treat air leaks in lung surgery

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Received 26 September 2009; accepted 19 October 2009; Available online 24 November 2009

Keywords: Air leak; Lung resection; Sealant; Randomised trial

I congratulate the authors for a randomised trial demonstrating the effectiveness of Coseal in reducing intra-operative air leak following lung resection [1]. The second aim of the study was to assess if Coseal reduced the number of patients with air leaks at 24 and 48 h following surgery. The study data showed that following the application of Coseal, the rate of air leaks increased at 24 and 48 h since the number of patients with air leaks increased from 15% (intra-operative air leaks) to 24% at 48 h in the Coseal group compared with 1% increase in the control group. Hence, the statement that the application of the sealant allowed significant reduction in the number of patients with air leaks assessed at 24 and 48 h after surgery is misleading. Moreover, this may also explain why there was no significant difference in the duration of hospital stay between the two groups instead of medical and surgical factors, as suggested by the authors, since randomisation should account for these factors otherwise the groups are different.

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doi:10.1016/j.ejcts.2009.10.014