Natural materials such as collagen and alginate have promising applications as dural substitutes. These materials are able to restore the dural defect and create optimal conditions for the development of connective tissue at the site of injury. A promising material for biomedical applications is chitosan-a linear polysaccharide obtained by the deacetylation of chitin. It has been found to be nontoxic, biodegradable, biofunctional and biocompatible in addition to having antimicrobial characteristics.

In a study Pogorielov et al., designed new chitin-chitosan substitutes for dura mater closure and evaluated their effectiveness and safety. Chitosan films were produced from 3 % of chitosan (molar mass-200, 500 or 700 kDa, deacetylation rate 80-90%) with addition of 20% of chitin. Antimicrobial effictively and cell viability were analysed for the different molar masses of chitosan. The film containing chitosan of molar mass 200 kDa, had the best antimicrobial and biological activity and was successfully used for experimental duraplasty in an in vivo model. In conclusion the chitin-chitosan membrane designed here met the requirements for a dura matter graft exhibiting the ability to support cell growth, inhibit microbial growth and biodegradade at an appropriate rate. Therefore this is a promising material for clinical duroplasty [1)].

1)
Pogorielov M, Kravtsova A, Reilly GC, Deineka V, Tetteh G, Kalinkevich O, Pogorielova O, Moskalenko R, Tkach G. Experimental evaluation of new chitin-chitosan graft for duraplasty. J Mater Sci Mater Med. 2017 Feb;28(2):34. doi: 10.1007/s10856-017-5845-3. PubMed PMID: 28110458.