

# **Biomaterials and Implants: Unmet clinical needs, Current Status and Recommendations**

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## **Abstract**

Medical devices are a major part of healthcare costs in many developing nations around the World. Nearly 80 percent of biomaterials and implants are imported from Europe and North America. The translational research ecosystem has evolved to address this chain of high healthcare costs and unmet clinical needs. A key challenge for innovation is the manufacturing of affordable biomedical devices without compromising on quality.

Against the above perspective, this talk will describe a few case studies illustrating the most recent research findings from our group and other leading research groups based in India, to illustrate how to take lab-scale research to biomedical device development through collaborative efforts of Academia and National laboratories with intensive-interactive inputs from Clinicians and Industries. In particular, the translational research on acetabular liner, dental implants and the multicentric pilot studies using patient-specific bone flaps for cranioplasty surgery will be particularly highlighted.

Towards the end of the presentation, I will discuss a set of policy-related recommendations for the accelerated growth of biomaterials science and implants in the next decade and beyond. It is the speaker's vision that such a discussion would not only encourage young researchers to be passionate about understanding the current challenges, and those of the end-user, but also inspire them to form strong collaborations for adaptive problem solving, thereby making significant contributions to the field. Given the right support, the key recommendations of the speaker can be highly transformative to the field and are ideas that can carry forward both people's wellbeing and the nation's economy in their energy and momentum.

Reference: Bikramjit Basu, "Biomaterials Science and Biomedical Implants: Status, Challenges and Recommendations" Indian National Science Academy-Springer monograph, 2020 (<https://link.springer.com/book/10.1007/978-981-15-6918-0>).