Correspondence

Caesarean sections on the rise

This has reference to the paper by Pai et al.—A high rate of Caesarean sections in an affluent section of Chennai: Is it a cause for concern?1 Pai’s article shows a Caesarean section (CS) rate of 45%, which is evidently a matter of concern for policy-makers and medical professionals. Although we neither have a national norm nor any reliable estimate of CS rate at the regional or national level, emerging international literature suggests that 45% is much higher than the rates prevailing in most developed and developing countries. Belizan et al.2 reported that in 12 out of 19 Latin American countries, the CS rate ranged from 16% to 40%. In the other 7 countries, the CS rate was less than 15%, which is the rate set as a norm for Latin American countries by the World Health Organization (WHO).

Even if we were to take the highest rate of 40% prevailing in the Latin American countries as our norm, the prevailing rate in Chennai among the population studied by Pai et al. is alarming. ‘The most useful observation from [this] survey’, as Pai et al. point out, ‘is the CS rate itself’, which requires further investigation.

I wish to share the results of two studies, one hospital-based and the other population/household-based, which I hope would contribute to a fruitful discussion among all concerned people:

1. As part of a study conducted in late 1996 on private hospitals in Chennai city, we collected from the Corporation Health Officer’s Birth Certificate Records names of 285 women who had delivered in the previous 3 months in various hospitals located in different zones of the city. Of these, 249 had delivered in 20 different private hospitals, and the remaining 36 in 3 maternity centres run by the Corporation. Using the addresses given in the Birth Certificate Records, these women were tracked and interviewed at their homes. Our survey showed that out of the 249 deliveries in private hospitals, 113 (45%) were by CS. The survey also revealed that there were hospitals where at least 80% of deliveries were by CS. No CS was reported among those delivered in maternity centres maintained by the Corporation, though they are designed and equipped to undertake CS.

2. In another recent household-level study (Muraleedharan VR, Suresh Saradha. ‘Health status, socio-economic conditions and expenses for delivery: A household analysis of pregnant women in Dindugal town, Tamil Nadu 1999,’ unpublished data) conducted among slum women in Dindugal town (in Tamil Nadu), we tracked all pregnant women in the slum areas between May 1998 and September 1999. Out of 1116 deliveries (done at home, or in private or public institutions), 6.5% were CS. However, among those (392) who had delivered in private hospitals, 12% were by CS.

The findings of the second study are noteworthy, because they are drawn from the entire slum population of an urban town, largely representing the poorest sections of society. Belizan et al. and other researchers support the view that CS rate is positively correlated with socio-economic conditions. Our studies, together with Pai et al.’s seem to support such findings, although in a crude manner.

Pai et al. do not show CS rate according to private and public hospitals. Very few would dispute that the CS rate in private hospitals is higher than in public hospitals. However, it is important to separate the two (private and public hospitals), as this information could provide important clues to the dynamics of the private health care market. Strictly speaking, we should then proceed to follow up outcomes in private and public hospitals and obtain data on patients’ socio-economic and other characteristics. Only then can we inquire further as to whether we indeed are ‘having an unjustifiably high rate of CS’ or not and examine the causes for the same.

The adverse effects of such high CS rates are well-recorded in the literature. In a country like India that can ill-afford wastage of medical resources, it is time for health policy-makers to understand such ‘disturbing’ phenomena and address them at the earliest. Evidently, part of the solution lies in overhauling the entire structure and functioning of the private and public health care systems in India.

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The survey clearly demonstrates that medical students lack sufficient knowledge on the issue of organ donation but have a positive attitude towards it. One of the ways forward could be to enhance the knowledge of medical students during their undergraduate days, so that when they become doctors they are aware of the legal status, are motivated and able to motivate the public to be actively involved in the process of organ donation.

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Convulsions in non-epileptics due to mefloquine–fluoroquinolone co-administration

Mefloquine is being increasingly used for the treatment of chloroquine-resistant *Plasmodium falciparum* (*P. falciparum*) malaria. In 1989, the World Health Organization (WHO) initiated reporting and investigation of neuropsychiatric adverse reactions to the drug. These adverse reactions, which include seizures, are now well documented following the use of the drug both in epileptic and non-epileptic patients. Mefloquine has been in use in India for several years and in an attempt to monitor adverse effects to this drug seen by our physicians, a questionnaire on the drug prepared by our adverse drug reaction monitoring centre (WHO special centre) was mailed to 1000 physicians of Maharashtra. The information sought to be obtained was regarding the number of patients treated with the drug, indication for use, dose used, number of adverse reactions seen with details and the outcome. A total of 100 physicians replied.

Three physicians reported convulsions following the use of mefloquine in patients who were non-epileptic, with no family history of epilepsy and no obvious predisposition. Between them, these three physicians had treated a total of 150 cases. On examining these reports carefully, it was seen that each of these 3 patients (2 men and 1 woman), had received one fluoroquinolone either prior to or along with the administration of mefloquine. The fluoroquinolones were sparfloxacin, ofloxacin and ciprofloxacin, respectively. Ofloxacin was given 2 days prior and ciprofloxacin and sparfloxacin were given together with mefloquine. The fluoroquinolones and mefloquine were given for the treatment of fever of unknown origin. The diagnosis of fever was later established to be due to *P. vivax* in one, *P. falciparum* in another and was not established in the third. None of the patients had severe or complicated malaria. Other adverse events noted (by all practitioners) in the survey were nausea, vomiting, diarrhoea, haematemesis, gastritis, diplodia, tinnitus, dizziness, maculopapular rash, aberrant ativoventricular conduction, visual disturbances and stomatitis.

Fever of unknown origin can have multiple causes. The absence of laboratory facilities in several parts of India compounds the problem, making prescribing empirical. India is endemic for malaria and typhoid and co-existence of the two has been documented.

Neuropsychiatric toxicity including convulsions due to fluoroquinolones has been reported. To the best of our knowledge, this is the first report of this combination leading to convulsions in non-epileptic patients. Drug-resistant malaria and typhoid are widely prevalent in India and this important preventable adverse event should be borne in mind. Physicians should make every attempt to establish a definitive diagnosis prior to the co-administration of agents for malaria and typhoid. In the eventuality of a requirement for empirical therapy, drugs with toxicities similar to those of mefloquine and fluoroquinolones should not be co-administered.

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Provide water, health and education—not nuclear weapons

It is a matter of concern that the governments of India and Pakistan appear to be set on the path of nuclear weaponization. The horror of the bombing of Hiroshima and Nagasaki seems to be fading from memory, and policy-makers are feeding the public with myths and half-truths about nuclear weapons.

As physicians, we are committed to protecting, preserving and improving the quality of life of individuals and societies. We are, therefore, extremely disturbed by the recent developments in the subcontinent and call on all citizens to raise their voices and halt this process. Once committed to actual weaponization, it will be exceedingly difficult to step back. The human, environmental, social and economic costs will be unbearably high, and we are likely to be drawn into an accelerating race of weaponization with disastrous consequences.

The horrific, uncontrollable and transgenerational nature of damage caused by nuclear weapons have been extensively documented. It is important to remember and reiterate that they are like no other weapons. Their effects are devastating and indefinite. Fundamentally, they are biological weapons. The radiation they unleash has terrible consequences. There is no treatment for radiation damage. All the so-called ‘treatments’ are merely supportive, waiting for the body to regenerate. Beyond certain levels of radiation, death is certain, sometimes mercifully quick, otherwise painful and lingering. Those who survive may be badly impaired. These weapons transgress every moral, ethical and humanistic principle. Their use cannot be condoned by even the most liberal interpretation of any ‘code of warfare’. Most apologists for nuclear weaponization proclaim that they are for deterrence only. However, this is a completely false position. Possession of nuclear weapons by any two countries...
does not decrease their hostility or their propensity to engage in non-nuclear conflicts. The tragedy at Kargil was the most recent example of this fact. An extreme illustration was the prolonged hostility of the cold war during which the former Soviet Union and the USA created an ever-increasing arsenal of nuclear weapons, enough to annihilate all the peoples of the world many times over.

The principle of 'no first use' is also of no great value. This implies a retaliatory strike capability, thereby diverting attention from the catastrophic consequences of any nuclear strike. It gives legitimacy to the completely false and suicidal concept of a 'limited nuclear war' which is itself part of the fallacy of deterrence.

The ethical, moral and ecological imperatives for discarding nuclear weapons are closely intertwined with the economic imperative. Conservative estimates suggest that about 1% of the Gross Domestic Product (GDP) over a period of 10 years will be needed to finance a minimum nuclear weapons programme. This money will have to be diverted from other sectors. Past experience suggests that it is the budget for sectors of human development, such as health and education, that will be reduced to pay for the weapons. To make the figures more understandable, the cost of the 'minimum deterrent' is equal to the cost of providing universal access to primary education for all children between the ages of six and fourteen. The cost of each nuclear arm 'Agni' (Rs 45 million) can finance the annual operation of 13 000 primary health centres.

Both India and Pakistan are among the poorest countries in the world. The Human Development Index, which indicates the quality of life in about 180 countries worldwide, ranks both countries in the 130s to 140s—very near the bottom. What we need to focus on is providing water supply, health and educational facilities for all our people. What we do not need is an expensive nuclear weapons programme that will aggravate existing tensions and divert scarce resources from far more important tasks.

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Yet to surface problems of corneal refractive surgery

Keratorefractive surgery is evolving at an astonishing pace. With any new surgical technique, there are implicit unknown short and long term complications and consequences. The short term consequences of refractive surgery relate to its effect on the quality of vision such as contrast sensitivity, glare, night vision, etc.¹ The long term consequences are yet to be known. The majority of refractive surgical procedures are being performed on individuals currently between 20 and 40 years of age. As this population ages, we are likely to encounter currently unknown problems. It is imperative that some of the likely consequences should be thought about so that methods to tackle them could be evolved pro-actively.

Effect of refractive surgery on eye banking
Refractive surgical techniques produce changes in the curvature, thickness, shape and structural and biochemical composition of the cornea. Screening potential donor tissue by slit lamp alone, which is the conventional and standard method, may not detect prior laser intrastromal keratomileusis (LASIK), photorefractive keratectomy (PRK) or automated lameller keratectomy (ALK). Do we need to shift to more sophisticated means of screening potential donors? Do we need to screen and study the curvature of potential donors by videokeratography? In India, affordability and availability of such sophisticated equipment will be a problem. Are such corneas fit to be used? If not, one can imagine the impact on the backlog of corneal blindness, especially in India. It has been estimated that in India there are about 1 million corneal blind people, out of which 200 000 are bilaterally blind. Even now, on an average, only 13 000 eyes are being donated in a year and only 7000 eyes are being grafted. Thus, at this rate, we would need another five decades to make up the backlog.² Therefore, discarding all corneas which have undergone refractive surgery would not be a feasible option. Also, studying the curvature of the cornea in an enucleated eye by videokeratography is not easy. The results will depend on how well the eye is held while under observation, without inducing curvature changes. Therefore, an eye holder which fulfils such needs would have to be designed. If such corneas are to be used, we would either need to change currently practiced surgical techniques or be prepared to have unexpected refractive results. The use of such donor tissue and the likely decentration of the flattened or in the case of hyperopia, steepened optical zone in relation to the entrance pupil, may have important effects on the refractive outcome in corneal transplant patients. Even if the graft is well centred over the entrance pupil, unexpected central corneal flattening or steepening may result in significant ametropia following penetrating keratoplasty or triple procedures.

Ophthalmologists need to think about this problem and make efforts to promote public awareness so that information regarding the deceased having had keratorefractive surgery is provided by relatives at the time of eye donation.

Effect of refractive surgery on calculation of the power of intraocular lens (IOL)
IOL is a standard and established means of rehabilitating aphakic patients. Currently, various formulae are used to calculate the power of the present-generation IOLs of patients who have an untampered cornea. As the population of patients who have had refractive surgery increases and these patients age, they will inevitably require cataract extraction and IOL implantation. A few small case series of conventional extracapsular cataract surgery or phacoemulsification following radial keratotomy (RK)³⁵ or PKR⁶ are available which highlight the likely problems ophthalmologists will face in the future.

Much of the error inherent in the calculation of the power of the IOL following keratorefractive surgery arises from difficulties in accurately estimating the corneal power of the eye. Many of the instruments used to measure corneal power assume central sphericity and a radius of curvature of the posterior cornea to be 1.2 mm steeper than the anterior radius. Following different forms of keratorefractive surgery, there may be clinically important irregular astigmatism or asphericity, particularly in patients undergoing RK with a small optical zone. Most IOL power calculations use a net index of refraction of 1.33 and the anterior radius of the cornea as 7.8 mm to estimate net corneal power. However, in PRK or LASIK, there is a flattening of the anterior corneal surface with little or no impact on the posterior radius. This change in relationships leads to inaccurate estimations of net corneal power by videokeratography, where a net index of refraction of 1.33 will overestimate the change in the central refractive power of the cornea by 14% following LASIK or PRK.⁷ Thus, measurement of both the anterior and posterior corneal curvature in relation to the entrance pupil will become a necessity. This will require the use of videokeratography, which is expensive and not
widely available in India. Corneal power can be determined by fitting a hard plano contact lens, manual keratometry or videokeratography. While the first method can be used only if the ocular media is clear, the latter two methods are considered to be the least accurate of all because they measure only four points approximately 1.5 mm from the corneal apex. This measured zone may be more peripheral to the central flattened area, especially following small incision RK leading to a lower calculation of the power of the IOL and postoperative hyperopia. Occurrence of transient flattening of the cornea post phacoemulsification has been reported in eyes with previous RK but not after PRK and LASIK. Moreover, dehiscence of the radial keratotomy incision during clear corneal cataract surgery has also been reported.

Finally, the long term effects of PRK and LASIK on the stability of refraction are not known and these could also have an impact on IOL power calculations and selection of the postoperative target of refraction. Moreover, some patients with preoperative lenticular astigmatism may have been treated with radial and astigmatic keratotomy, LASIK or PRK with concurrent laser or incisional astigmatic surgery. Such patients may have a suboptimal outcome following phacoemulsification with IOL implantation, or require additional refractive surgery or modified cataract surgery as the IOL implant will not have the astigmatic properties of their crystalline lens. These problems will be faced by ophthalmologists practising in India earlier than colleagues in the rest of the world, because cataract appears a decade earlier in the Indian population as compared to the western population.

Effect of refractive surgery on intraocular pressure (IOP) measurements
Applanation tonometric readings are affected by the corneal curvature and thickness. The Goldmann applanation tonometer underestimates the IOP in thinner corneas and overestimates it in thicker corneas. Other factors, such as the physical characteristics and distribution of collagens and glycosaminoglycans composing the cornea or the presence or absence of structures such as Bowman’s membrane may also affect the resistance of the cornea to indentation. The structure, shape and thickness of the cornea is altered after PRK and would therefore be expected to affect the accuracy of applanation tonometry. A 0.5 mmHg mean reduction in tonometer readings is associated with a 23 μm reduction in the corneal thickness following PRK. This finding may be of importance at higher depths of ablation, as in the case of higher degrees of myopia treated by LASIK and PRK surgery. Similar results have been reported after LASIK also, though the cause remains to be established. The observed effect may be greater at a higher IOP. The small change in IOP measurement following PRK is probably not enough to alter a therapeutic decision in an individual patient known to have glaucoma of the angle closure type or open angle glaucoma with high IOP. However, it might pose problems in the management of normal tension glaucoma. Also, it might delay the recognition of glaucoma if the IOP measurement is taken as the main screening tool for initiating the evaluation of a patient suspected to have ocular hypertension or glaucoma.

Changes in the pattern of contact lens fitting
Loss of the best corrected visual acuity after different types of corneal refractive procedures is well documented. If it improves with a contact lens, fitting such patients is difficult, especially after RK. How the fitting of a contact lens is going to differ in patients after PRK and LASIK remains to be clearly established.

Future research is needed in these areas which could have a profound impact on public health, especially of an ageing population.

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