A Legal Economics Analysis of Dental Implant Pooling

Yuan Gao

International School of Law and Finance, East China University of Political Science and Law, Shanghai, China

ABSTRACT
With the improvement of living standards and the deepening of population aging, China's demand for dental implants has continuously shown double-digit high-speed growth, while the field of charging irregularities, the heavy burden of costs and other issues are also increasingly prominent. In 2022, the National Health Insurance Bureau issued a notice stating that it will carry out a set of procurement of dental implant consumables, and determined that the price of the whole process of regulating the price of medical services for a single conventional implant in a three-tier public hospital is targeted at 4,500 yuan. In January 2023, the inter-provincial coalition of dental implant procurement led by the Sichuan Provincial Health Insurance Bureau under the guidance of the National Health Insurance Bureau opened the bidding in Chengdu, and the average price of the winning products was reduced by 55%. Known as "the most difficult collection in history" landing, marking the first attempt to achieve the collection of high-value consumables from the field of medical insurance expansion to the field of non-medical insurance, but also a large number of private dental institutions involved in the collection. Dental implant collection for the whole industry chain may bring the impact of triggered a continuous debate, whether it can achieve "volume for price" to promote capacity upgrading or compression of profits lead to the constraints of industry innovation still need time to prove.

KEYWORDS
Dental Implant; Centralized Purchasing; Legal Economics; Price Limit

1. INTRODUCTION
Stomatology is a special field in the medical industry, large and small dental clinics blossom everywhere, the private sector has a high market share, and public hospitals are more fully competitive, high degree of marketisation, private institutions are often the price advantage and service advantages to fight against the monopoly of public hospitals of manpower and resources, and usually "digging for a foot! The private institutions tend to compete with the monopoly of public hospitals in terms of manpower and resources with their price advantage and service advantage, and usually invite famous doctors from tertiary hospitals to sit in their clinics by "tapping the wall", which directly brings a stable customer source. All along, oral health care is known for its expensive prices, including dental implants and orthodontics is particularly prominent, not into the medical insurance all out-of-pocket, often tens of thousands of dollars, behind the back of many patients deterred, but also triggered a strong mistrust between the doctor and the patient, it is difficult for patients not to suspect that the price of water, always think that the doctor "in the pocket", but in fact, the objective view, orthodontic and dental implants is almost the oral clinic in the highest number of follow-up two projects, tens of thousands of the total cost of most of the package, including consumables, and the cost can be said to benefit from lifelong, average to each follow-up, spread out to the use of each year, the price does not seem so high, and
the implants need long-term maintenance, in fact, dental implant charges are covered by the patient after 5 or even 10 years of warranty after planting. In fact, the charges for dental implants cover the patient's 5 or even 10 year warranty after the implant is placed.

To put it in another way, medical treatment originally belongs to the category of high-end service industry, but the patients always complain about the poor attitude of the doctor when they remember their rights as consumers, and in the payment of the service should be the price when they forget their obligations as consumers, think that the doctor should be regardless of the return to cure the sick to save people's lives of the "white angels", and thus stand on the moral high ground to judge the doctor charging high fees is degrading medical ethics, never thought that the doctor is also an ordinary person who needs to support his family and livelihood. Moral high ground to judge the doctor charges high is degrading medical ethics, never thought of doctors are also need to support the family of ordinary people, ten years of professional training, the difficulty of a large number of manual services of course should be paid more.

In recent years, dentists are undoubtedly the most discussed topic is the national dental implant procurement policy and may be followed by orthodontic procurement, in addition to sighing that income will be further compressed, but also most of the collection of whether it will bring the private and public competition pattern, domestic and imported consumables to share a slice of the pie and other dynamics of the impact. Ningbo, where the author is located, is the earliest pilot city for dental implant procurement, and on August 24, 2021, the Ningbo Health Insurance Bureau issued a "Program on Further Clarifying the Payment of Dental Implant Projects by Health Insurance Calendar Year Accounts", which included dental implants in the category of available health insurance calendar year account settlement (in fact, it had already been included in the program for several years before the program was issued), but it can be observed that these policies do not seem to bring the expected impact. However, it can be observed that these policies do not seem to have brought the expected impact, the short-term did not usher in the imaginary "dental implant fever", the number of patients choosing dental implants has not risen significantly, the so-called release of consumer stock did not reflect the role. With the landing of the national dental implant collection and procurement, what will be the impact on the oral healthcare industry in the whole country?

2. THE COLLECTION AND PROCUREMENT OF DENTAL IMPLANTS

2.1. Policy Background

Oral implants are an important way of restoring missing teeth. Compared with conventional restorations such as fixed denture and removable denture, the function, structure and appearance of dental implants are closer to that of natural teeth. With the improvement of living standards and the deepening of the aging population, the demand for dental implants in China has continuously shown a double-digit growth, while the problems of irregular charges and heavy cost burden in this field have increasingly become one of the pain points of people's livelihood. In private hospitals and public hospitals, the cost of planting a tooth is mostly in the range of 10,000 to 20,000 yuan, and according to the calculation of planting a dozen or so teeth in one mouth, it will cost more than 100,000 yuan or even hundreds of thousands of yuan, which is known as "a mouthful of implanted teeth, a Tesla".

In January 2022, the executive meeting of the State Council decided to gradually expand the coverage of high-value medical consumables collection and procurement, and explicitly required that dental implants, which are of concern to the public, be included in the collection and procurement scope. In May, nine ministries and commissions jointly issued the "Points for Correcting the Unconscionable Winds in the Field of Pharmaceutical Purchase and Sales and in the Medical Services in 2022", and deployed the "Standardization of Charges for Dental Medical Services and Consumables". On the basis of extensive research and surveys and solicitation of opinions, the NHPA decided to carry out special treatment of charges for dental implant medical services and prices of consumables. In
September last year, the State Medical Insurance Bureau issued the "Notice of the State Medical Insurance Bureau on Carrying Out Special Governance on Charges for Oral Implant Medical Services and Consumables Prices", which divides the cost of implanting a tooth very clearly into three parts, i.e., implant consumables, crown consumables, and medical service costs, adopts the charging method of separate pricing, and refines pricing for the medical service costs and the set of picks, which picks up one of the implant consumables, i.e. Negotiations between the state and dental implant manufacturers to reduce the price of dental implant consumables from the source. As for the proportion of higher service costs, the "Notice" to determine the three-level public hospitals, a single conventional implant medical service price of the whole process of regulation target of 4500 yuan, the service is the outpatient consultation, biochemical testing and imaging, implant implantation, crown placement, and other medical service prices, excluding implants and crowns, the direct effect of this regulation target is the object of the public health care institutions, private health care institutions still The direct target of this regulation is public medical institutions, and private medical institutions still implement autonomous pricing.

2.2. Price Limit

About one-third of the cost of dental implants is the cost of materials, and two-thirds is the cost of labor and technical services. The cost of planting a tooth is expected to drop to a few thousand yuan by means of price reductions in the collection and procurement of implants, price limits on medical service regulation, and competitive bidding and listing of crowns. On 11 January 2023, the collection and procurement of oral implant systems for inter-provincial alliances under the guidance of the National Health Insurance Bureau and led by the Sichuan Health Insurance Bureau was opened in Chengdu, Sichuan, with an average price reduction of 55% on the winning products, which has triggered the attention of all sectors of the community. Some people call the dental implant collection and procurement is 'the most difficult collection and procurement in history, and some people describe this process as a small medical reform. The collection through the "bandwagon" to promote competition, the main squeeze is the price of implants water.

Admittedly, this inter-provincial procurement alliance collection led by the National Health Insurance Bureau guidance and coordination, the Sichuan Provincial Health Insurance Bureau, the difficulty, the long time span, the process of the arduous, far more than other drugs and consumables collection. And before the coronary stents and other medical supplies mining institutions involved mainly public hospitals, the relevant products are also in the health insurance reimbursement catalogue is different, dental implants belong to the category of consumer health care, medical beauty, high degree of marketization, private medical institutions accounted for about 80% of the market share, surgical and consumables are not in the directory of health insurance reimbursement. The dental implant collection and procurement "boots on the ground", marking the collection and procurement of high-value consumables to achieve the first attempt to expand from the field of medical insurance to the field of non-medical insurance. At the same time, the high degree of concentration of implant brands, product system composition and dental implant cost composition complexity, etc., all for the oral implant dental procurement will bring no small difficulty.

2.3. Data Analysis

According to the data of the National Health Insurance Bureau, the collection and procurement gathered the demand of nearly 18,000 medical institutions nationwide, amounting to 2.87 million sets of implant systems, accounting for about 72% of the annual number of domestic dental implants (4 million), and it is expected to save about 4 billion yuan of patients' costs every year. At the same time, a total of 55 enterprises participated in this collection, of which 39 were selected, with a winning rate of 71%. Successful enterprises include both some well-known international enterprises and domestic enterprises. Before the collection and procurement, the price of the higher taxis Zhuo Man, Deng Shi Bai, Nuobaoke implant system from the original procurement median price of 5,000 yuan down to
about 1,850 yuan, the market demand for the largest Au Dental, Deng Teng implant system from the original procurement median price of about 1,500 yuan down to about 770 yuan, the selected products are rich, the inclusion of the four pure titanium and titanium alloy two materials with better performance, higher clinical acceptance of the implant, and covers It also covers other consumable parts of oral implants, which can meet most of the clinical needs.

The collection of innovative 'k-value' calculation method, through a scientific counting method to take the product market effective low price number. For the original low-priced products, the impact of price changes is small; but for the original expensive products, a greater price reduction is required to be shortlisted to ensure that the product price reduction is more scientific and reasonable. From the effect, almost all brand products in the domestic market are involved in the collection of bidding. In public medical institutions, medical services and medical consumables separate pricing charges, medical consumables implementation of the "zero-differential rate" sales policy, the selected price is the patient ultimately to the hospital to pay the price of implants. In private medical institutions, oral implant prices are market-regulated, allowing private medical institutions to add a certain percentage on the basis of the selected price of the implant.

Ningbo dental implants price limit program implementation, there have been local doctors said that the program involves some dental implants brand is too "strange", especially some of the national brands have never been used, worried about the use of problems, smashed their own signboard. For the previous pilot experience in Ningbo, the inter-provincial alliance procurement of higher market demand for brand-name products to give a certain degree of protection for the purchase of larger products into the A group, as long as the price reduction to a certain extent, ranked into the top 60% will be able to win the bid. Compared with public hospitals, private medical institutions are more concerned about the cost-effectiveness of products, the future of dental implants may no longer be a "luxury", there will be high-end, mid-range, low-end products to develop together to meet the needs of different types of people.

The core of volume-based purchasing is "volume for price" - ensuring sufficient purchasing volume is the key to squeezing out the water from inflated prices. As a large number of dental implant services are concentrated in private medical institutions, how to encourage them to participate in the procurement and actively "report the quantity" is one of the difficulties of the inter-provincial alliance. The dental implant procurement "inter-provincial alliance" covers 31 provinces, municipalities directly under the Central Autonomous Region, nearly 18,000 oral health care institutions, of which 13,500 private medical institutions, accounting for nearly 80%. For all dental implant manufacturers, this inter-provincial alliance of oral implant system procurement is still a "new challenge" - the procurement policy is the first of its kind, and enterprises and medical institutions are also involved for the first time, the long-term impact on the dental implant industry is not yet known.

### 3. IMPACT OF DENTAL IMPLANT POOLING ON THE INDUSTRY

#### 3.1. Overall Analysis

Since April this year, the results of dental implant collection and procurement has begun to land in the country, the cost of a single dental implant bid farewell to the "era of 10,000 yuan", patients feel the obvious benefits. But with the price of dental implants together with the decline of the Tongze Medical, Ruier Group and other dental chain group's share price, their share price than the end of March fell 18 per cent and 50 per cent respectively.

The capital market is extremely sensitive to the term collective purchasing. In essence, collective purchasing is a way to reduce purchasing costs and improve purchasing efficiency through bulk purchasing. For patients, collective procurement can reduce spending, for pharmaceutical companies, collective procurement can expand sales. This is a win-win thing, why talk about it? The reason is that collective purchasing may bring the reshuffle effect.
In the traditional pattern of the pharmaceutical industry, the leading companies in the niche track have an overwhelming advantage, so they can use this advantage to get a higher premium. Collective purchasing breaks the monopoly pattern in the past, will greatly reduce the expectations of these leading enterprises, resulting in a significant decline in profits, so collective purchasing is seen as a negative thing.

Of course, the expectation that in the long run dental implant collection is good news is not a few. Pacific Securities pointed out in the research report, the domestic development of dental implants is still in the early stages, dental implant doctors there is a shortage, as well as the existence of a large number of second and third tier blank market. Domestic local implant brand is expected to achieve import substitution, to reach 30%-35% market share, factory calibre scale is expected to be 4.2-10.5 billion yuan. In addition, with the national pursuit of dental aesthetics, the penetration rate of all-porcelain teeth is expected to further increase. Assuming that zirconia all-ceramic teeth penetration rate of 40%, the number of dental implants to 15 million, the average price of all-ceramic teeth 3,000 yuan / piece, dental implants with zirconia all-ceramic teeth potential market space of about 18 billion yuan. Guohai Securities said in its research report released in 2021, dental implants are the best solution for the treatment of missing teeth, both medical and consumer attributes, from the permeability point of view, in 2020, the number of dental implants per 10,000 people in China 28, compared with South Korea (dental implants have been entered into the health insurance) 632 per 10,000 people, there is a 21-fold gap, according to the developed countries penetration rate of about 200 per 10,000, the price of the current 50% of the calculation China's dental implant market space up to 106 billion yuan, the next ten years of dental implant track high growth certainty. According to the above data, China's dental implant market outlook seems to be a thriving, but whether the collection can release the consumer stock remains to be seen, after all, the vast majority of the previous generic drugs, coronary stents did not achieve the volume for price.

Almost 40% of patients over 60 years old missing teeth are not doing any restoration, investors only see patients who come to set teeth, but there is a large part of even activity denture did not do, there is a survivor bias; Third, the price reduction is limited, implant consumables in the overall cost of dental implants only account for about one-third. In the long run, it may bring certain disruption to the dental industry, including redistributing the market share of upstream consumables enterprises and eliminating backward production capacity; getting rid of the authority premium of public hospitals so that they can compete with private institutions. Of course, according to the spirit of the Circular of the National Health Insurance Bureau, the price limit on the service fee at the same time of the procurement of consumables may also have a direct impact on the income of dentists.

### 3.2. Impact on Upstream Consumables Enterprises

In this implant system procurement, the selected enterprises include not only international famous enterprises such as Stroman and Densburg, but also Korean brands such as Au Dental and Denton, which have a high market demand, as well as domestic enterprises such as Weihai Weigao and Changzhou Baikangte. For enterprises that have already occupied a certain market share and whose products have been clinically proven over a long period of time, winning the selection can further expand the scope of use of their products; enterprises also have the ability to adapt to the market environment under the centralised procurement through the adjustment of their products and pricing system. For some enterprises that have not yet opened up the market situation, collection and procurement provides a channel to achieve rapid access to hospitals at a lower cost of sales, which will help enterprises grow faster, especially for national brands. Companies that have not been selected or have not declared collective procurement will establish a clearer market positioning, such as positioning in high-end products, complex and difficult cases.

At present, the domestic dental implant market is basically monopolised by foreign brands. A research report by Deppon Securities shows that the market share of domestic brands accounts for about 10
per cent. Globally, European, American and Korean implant systems dominate. A research report by Guohai Securities shows that: the positioning of domestic implants is close to that of Korean systems, but it started late and was suppressed by the price of Korean systems, and the market share is expected to be at 7%, with about 10 enterprises, with a total revenue of 200 million to 300 million yuan, and the largest revenue of about 50 million yuan, "there is no scale implant enterprise yet. A research report by Ping An Securities mentioned that, among the imported brands of Chinese implants, the cost of a single dental implant using European and American implants is about 15,000 yuan, and the cost of a single dental implant using Japanese and Korean implants is about 8,000 yuan, and there are currently a total of 15 domestic companies and organisations that have been approved to provide implants, of which two are from China's Taiwan, with a relatively large share of the market share of Huaxi Stomatological Hospital, Beijing Leiden, and Weigao Gelikan, Dabo Baiduotai, Jiangsu Chuangying and so on.

For domestic implant brands, this is a market that is firmly held by imported products, and it is very difficult to break through. Although domestic brands have a certain price advantage, but after the collection and procurement is difficult to quickly release volume or achieve domestic substitution. A representative of the domestic enterprise Changzhou Baikangte Medical Instrument Co., Ltd. said that the company's product offer in 2020 on the basis of the lowest national market price of 15% discount, the product's profit will become extremely thin, but for the sake of sales and future development, winning the bid is the first priority.

For the late-starting domestic dental implant consumables manufacturers, collective purchasing is both pressure and opportunity. If there is no collective procurement, completely relying on market regulation, the future market share may be more monopolised by foreign enterprises. A representative of domestic dental implant enterprises said that for domestic dental implants with short clinical application time and few cases, the expansion of the whole dental implant market scale will help enterprises to quickly accumulate more clinical application data and cases, which will be helpful for future long-term application and research and development.

Relevant persons said that after the implementation of collective purchasing to a certain stage, a larger share of imported products, do not rule out the possibility of building factories in the domestic production, or through joint ventures, OEM production. If multinational enterprises and domestic enterprises in-depth cooperation, the former can reduce product costs, the latter can enhance product development, design, technology and other levels, to achieve a win-win situation.

Overall, the upstream consumables enterprises represented by implants are expected to be clearer and form a richer and multi-level product ecosystem under the influence of the collection and procurement policy, both in terms of product positioning and corporate positioning.

### 3.3. Impact on Downstream Medical Institutions

Dental implant procurement began in the upstream consumables, consumables field of change, but also the downstream service side of the opportunity. Dental implant collection and procurement measures are mainly for public medical institutions, but due to the high market share of private medical institutions, a large number of private dental institutions participate in the collection and procurement. It is understood that of the 18,000 medical institutions participating in the implant system collection, 14,000 are private; these private medical institutions have also committed to responding to the regulation of medical service prices, which reflects the collection pressure on the private sector is a very strong conductive.

In terms of publicity and promotion, private medical institutions are particularly active. Although the collection of relevant results are still in the process of landing, but private dentistry has long begun to take the opportunity of collection, high-profile marketing activities. At present, a number of companies, including Tongze Medical, Taikang BayBo, and Meiwei Dental, have announced that their medical institutions will implement the local procurement policy. Offline, some medical
institutions have announced through banners and displays in the halls that they have begun to implement the collection price, and that they will "reduce the price but not the quality". In building advertisements, advertisements for "collectively procured dental implants" appear frequently. On the Internet platform, private medical institutions still have dental implants that cost more than 10,000 yuan, and they have launched collection packages. In Beijing, for example, the preferential Swiss dental implants are generally more than 6,500 yuan, but some institutions are as low as 5,980 yuan, and the first Korean dental implant is only 2,080 yuan; some packages are even labelled "below the collection price" and "discounted on the collection discount", and a Beijing dental chain has explicitly listed the price on the Internet platform. In the past, implantation was a high gross profit item for private dentistry. Throughout the dental market, it seems to have set off a round of price war with the collection as the node.

Collective purchasing does compress the profit space of private medical institutions to a certain extent, institutions in order to survive must improve the volume of patients, service volume; originally not involved in the price war of the general outpatient clinic, may also be involved in the price war. "The biggest advantage of the collection for private medical institutions is to do a wave of extensive and continuous market education, so that patients who previously did not understand or knew little about dental implants recognise that their own or their family's dental problems can be solved by dental implants." The head of a private dental clinic said that as far as the overall trend is concerned, the number of patients opting for dental implants will continue to grow, and the pooling has become an accelerator for this process.

Then when the collection of comprehensive landing, the short term private dental need to intensive marketing, price war to attract flow, while patiently waiting for the peak of consumption growth; long-term need to find new profit margins, build a new core competitiveness. In the market under the pressure, the future of more private dentistry may change the way of customer acquisition, from relying on the price difference to customer relationship building, through word of mouth fission to customer acquisition; organisations will shift from the importance of dental implants and other large projects to pay more attention to preventive departments, or to generate new preventive projects, which will be built into a profit item.

Secondly, in order to meet the diversified needs of patients, in addition to providing implant brands within the scope of collection and procurement, medical institutions can also be achieved through high-end implants, high-end services, etc. package product stratification, as well as differentiation with the public healthcare institutions In addition, the collection and procurement of healthcare institutions management and operation cost control has put forward higher requirements. The cost of consumables can hardly be compressed after the set purchase has been implemented, and the manpower cost from doctors can't be reduced significantly, otherwise it may lead to brain drain, so the cost control of management and operation is especially critical. In addition to personal payment, through commercial insurance to reduce the accessibility of dental implants is also a direction that medical institutions can focus on. For example, Taikang BayBo Dental has launched "Taikang Dental Implant Worry-free Insurance" and "Good Teeth for Life" long-term dental insurance, which provides free replanting protection for dental implant customers of designated brands.

4. SUMMARY

Dental implant collection and drugs and other supplies collection has a fundamental difference in logic: the logic of the other collection is to squeeze the circulation of water, on the one hand, benefit patients, on the other hand, improve the price of medical services, better reflect the value of the doctor's labour; or will be reduced after the release of medical insurance balance to the doctor, so that the doctor's income is more sunshine. The dental implant collection and procurement along with medical service price regulation, means that the doctor's income decline, to get the same level or even higher income, we have to pay more labour, service more patients. The industry is concerned that the
overall decline in the cost of dental implant services may also compress the profitability of medical institutions, which in turn affects the motivation of dentists to learn and engage in dental implants.

The training cycle of a dentist is over 8 years and the number of doctors who can perform specialised dental implant services is very limited. Dental implants are one of the most technical operations in the dental field, especially those involving bone augmentation, soft tissue augmentation, maxillary sinus lifting, and aesthetic zone implant cases, and there are not many dentists who can be proficient and do a good job. In the past, dentists doing orthodontic and implant-related services were the highest earners in the industry, and the price limit for healthcare services is likely to lead to a sharp drop in dentists' income or even affect their career choice - exodus from public healthcare organisations. In Ningbo, for example, 2,000 yuan of the overall charge for dental implants belongs to the medical service fee. Only a small portion of this will be allocated to the practitioner's personal labour costs, and the implant dentist's personal performance status will change from the highest to the lowest in the whole department, which may not be as much as the income from making a porcelain tooth, or even less than the income from filling a tooth in a dental clinic. Under such circumstances, many implant dentists may not be inclined to do implants in public hospitals, thus giving rise to the problem of "refusing customers and pushing them away".

Admittedly, along with the emergence of the price limit, the implant doctors in public hospitals in the hospital commission significantly reduced, but positively predicted that this may also indirectly promote the socialisation of the dental industry, so that more excellent doctors out of the hospital, or directly choose the private institutions. Afterwards, with the full opening of multi-point practice, more specialists to the private institutions to sit is also a kind of redistribution of medical resources.

In addition, most oral implantologists will have a brand of dental implants that they are more familiar with and favour. For doctors, using a different brand of dental implants also means using a different dental implant operating system, which has a high learning cost and makes it costly for doctors to change their usage habits.

The goal of centralised procurement is to squeeze out the "kickbacks" and "water" in the distribution of consumables, but for the dental implant industry, expensive academic promotion and doctor training are almost unavoidable, and it remains to be seen whether over-squeezing the profit margins may hamper the industry's development.

To sum up, perhaps in the environment of the collection and procurement, oral health care upstream and downstream enterprises may face a short-term decline in profits; but in the long term, the collection and procurement will enhance the penetration rate of oral services, to achieve the overall growth of the overall dental industry. For the entire oral healthcare industry chain, how to deal with the overall impact on the industry brought about by the collection and procurement is naturally a top priority; however, how to promote the development of upstream consumables, equipment and even new technologies is the source of the industry's eternal vitality. After all, only industrial upgrading can better meet the needs of patients, which is the most important thing in the future for the more competitive consumer healthcare field.

REFERENCES
