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# Eternal Flames and Roman Candles

*" Business history is filled with 'Roman Candles', companies whose moats proved illusory and were soon crossed." –*

Warren Buffett, 2007 letter to shareholders

For all of the companies I have encountered over the years, I can't remember more than a couple of instances in which the executives acknowledged that the business was devoid of any competitive advantage. However, by definition, competitive advantage can only be possessed by the minority. And in most of these instances, the advantage will be transient. Only in rare cases are competitive advantages sustainable. It is these companies that interest me most. But not only are they rare, they are usually very difficult to distinguish from those with transitory advantages.

The leaders of the dental implant industry appeared to me, at one time anyway, to possess sustainable competitive advantages. Five or so companies have dominated this industry for some time (often referred to as "premium" implant producers) while all but two of these are diversified through businesses in other industries. The two "pure plays", both based in Switzerland, are Nobel Biocare and Straumann. These companies have been struggling somewhat in recent years. What is not yet clear is the extent to which the causes of these difficulties are cyclical in nature, relating to weak economic conditions, or structural, relating primarily to permanently adverse changes in competitive conditions. Anyone who has spent some time looking at these companies will know that there has been plenty of talk around the impact low cost competition.

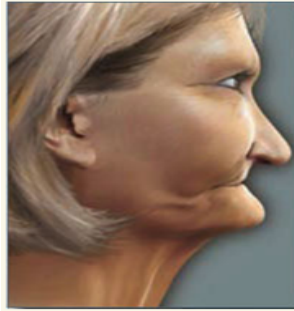
But what I hope to do here is elaborate on the various reasons why the business conditions in this particular industry have evolved in such a manner as to make the market leaders far more vulnerable to competition than once appeared likely. I believe this will be a fascinating case study to follow and I am keen to hear the opinions of others on my observations. The focus of this commentary is on the competitive conditions (or my interpretation of these conditions) and so naturally I am not expressing any view on the overall investment merits of any company mentioned here. It also goes without saying that the observations expressed here are based on my own personal views.

## Industry Characteristics

Dental implants serve an important function in that this treatment is often the next best thing to a real tooth. When a person loses a tooth, the bone begins to immediately degrade and that is why some people end up looking like this:



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Facial appearance after tooth and bone loss

In a large number of cases, people, for one reason or another, do not seek treatment for tooth loss. When they do, they are usually treated with a crown and bridge, which involves filing down adjacent, healthy teeth to enable fixation of a prosthetic tooth. This destroys otherwise healthy teeth. Dentures may be another alternative but these are often uncomfortable and inconvenient. Implants are almost all made from titanium, which is strong and integrates well with bone. The prosthetic tooth (crown) that sits atop an implant is aesthetically pleasing. Assuming the implant has been well fitted, once it has integrated with the bone, patients will experience none of the restrictions or inconvenience of dentures and the implant should last a lifetime, though some restorative work will occasionally be required.

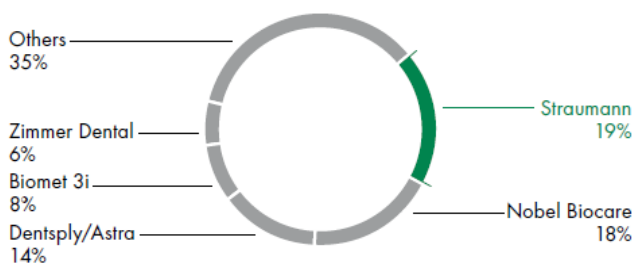
Estimates of penetration rates vary. Straumann estimates that only 15-20% of adults treated for tooth loss in the USA receive an implant. Europe is the birthplace of dental implants so penetration rates are higher. Penetration rates in emerging markets are much lower. Why are penetration rates so low? Some possible explanations:

- Cost: Implants are in large part not reimbursed by governments or insurance companies. Implant procedure costs vary depending on a range of clinical and commercial factors, but a single implant might cost in the range of \$2,000-\$4,000. More complex, complete restoration cases might cost \$50,000 - \$80,000. The out-of-pocket cost is often significantly higher than alternatives.
- The dental implant industry is still comparatively young and remains, in many countries, primarily a referral market. General Practice dentists will usually not perform implant surgery and are often reluctant to refer their patients to a surgeon (foregoing revenue may be one reason).
- Bone: there must be enough bone in which to imbed the implant; this is not always the case.
- Time: Implant procedures take time and may involve multiple visits to complete. It can take months for integration to take place, which may restrict eating habits.
- Aversion to surgery. These days, local anaesthetic is used, but the procedure is still somewhat invasive (if you're not too squeamish checkout some videos on YouTube) and some patients will simply not countenance the idea of undergoing such treatment.

Most manufacturers believe that the growth opportunities for the industry remain immense. Overall, I think that demand for dental implants will continue to increase in the future. However companies that lack a competitive advantage may struggle to exploit growth opportunities, as competition will increase. With that in mind, let's take a look at the supply-side characteristics of the business.

The market appears reasonably consolidated (see chart from Straumann below);

THE GLOBAL<sup>7</sup> DENTAL IMPLANT MARKET BY SHARE OF SALES



Source: Straumann estimates, based on Millennium Research Group and iData.

For Zimmer, Biomet and Dentsply, implants are a comparatively small component of profits. Nobel and Straumann are effectively implant "pure plays". Both are headquartered in Switzerland. We mentioned Nobel Biocare [here](#). Straumann in particular can be considered a pioneer, having been founded in the 1950s. Nobel was founded in the 1980s. Both companies manufacture in-house and sell in most markets around the world, largely using in-house sales forces.

Straumann is probably recognised as the highest quality operator in the industry but both claim to offer industry-leading manufacturing quality and customer support/service, augmenting this with client training programs and symposia. Each also claims that the wide array of in-house products have robust clinical backing as a result of years of clinical experience and evidence from numerous clinical trials. Straumann and Nobel claim to differentiate their offerings on these terms rather than engaging in price competition.

### Elements of competitive strength

When I first looked at this sector many years ago one feature I found most interesting was that the "premium" implant companies possess characteristics that appear to confer a sustainable competitive advantage. These largely revolve around customer search and switching costs. The narrative goes as follows:

Dentists are conservative and will be reluctant to "trade-down" to implants that lack a comprehensive clinical history, for fear of risking patient health or their own reputation. Factors that are supposedly important in choosing implant systems include ease of use, the

level of supporting clinical research, perceptions around design and manufacturing quality, assumptions around manufacturer longevity (to ensure spare parts will be available) and customer service. These factors would appear to play into the hands of the more established, larger premium implant companies. Also, the premium implant companies often offer high-touch services, including clinical advice, training courses and reliable delivery networks. According to Straumann, the cost of the implant and ancillary components accounts for only 15-20% of the treatment bill, making the idea of trading down less appealing to the practitioner. What's more, the toolkit is often system-specific and some restorative techniques (fitting and preparing to fit the crown) may be system-specific, adding more potential headaches to those considering switching to alternative systems. On the surface there appear to be multi-layered search and switching costs that seem to create a competitive advantage for the premium implant companies.

## **Business Performance**

Before the crisis, Straumann and Nobel had produced remarkable performances, with persistently high rates of growth and outstanding returns on capital. For example, from 2002 to 2007, Straumann's revenues grew at around 20% per annum with net profits up by around 25% per annum. For the same period, Nobel achieved sales growth of 16% per annum with profit growth around twice this rate.

As implant treatment is often elective, expensive and paid for primarily out-of-pocket, demand growth slowed dramatically in 2008 and remains very subdued today. It appears as though the implant market has continued to grow over the past five years, though at a much more modest pace, likely in the 1-5% per annum range. Within this, it does seem as though the top five premium companies (Straumann, Nobel Biocare, Zimmer, Biomet 3i and Dentsply / Astratech) have in aggregate lost share. The numbers I have seen suggest the premium manufacturers have seen their share of industry volume decrease from around 70% to under 60% since 2007.

Straumann and Nobel have struggled greatly since 2007. Straumann's 2012 reported sales were modestly below 2007 levels with Nobel's down by around 13% over the period. Straumann in particular, has had to face significant currency headwinds. With around 40% of its cost base in Swiss Francs versus less than 15% for revenues, the significant strength in the Franc has been a particular headache. Both have been hit by other factors, such as restructuring costs and impairment charges. However there have also been the more concerning effects of negative mix (customers trading down to cheaper products) and the cost of "investment spending" – investing ahead of an expected recovery – though it is not clear how much of this increased cost might simply be the higher cost of doing business in a new environment. While it is difficult to ascertain a trend in normalised profits, margins at both are significantly down over the past five years.

Unsurprisingly, the stocks are also well down from their respective 2007 peaks. The Balance Sheets of each remain clean and there remains the possibility that current profit levels transpire to be very depressed, potentially making the stocks very cheap at current levels. However investors who might ponder an investment should be confident in the

competitive strengths of the businesses in order to believe that these companies can retain an adequate level of profit.

## Thoughts on Competitive Position

In any business, with the absence of competitive advantage, competition will erode excess profitability, no matter how much growth potential an industry appears to have. So while I can accept that there appears to be significant opportunity for premium implant companies to grow, to invest in the stocks one must believe that the companies possess something that will enable them to extract a disproportionate share of the industry's spoils. Without a sustainable competitive advantage, it will not prove possible to sustain above-average profitability.

Previously I suggested that customer search and switching costs may confer upon the premium companies some sustainable competitive advantage. If this thesis is correct, these companies may present very interesting investment opportunities. If this proves incorrect, these companies will probably continue to struggle. Admittedly, I don't know where the truth lies here. However I believe that the industry is undergoing some changes that may be in the process of undermining the position of the premium implant companies. Below I elaborate on some of these factors.

### (1) A victim of opportunity?

High returns attract competition. To the extent that there are barriers to entry, some wannabe competitors may shy away from entry. However if the industry is under-penetrated and offers a lot of growth potential, this can embolden competitors who may have been otherwise indecisive. After all, the customers of tomorrow are not yet captive and the new entrant does not necessarily have to worry about taking business away from an incumbent to justify his business case. Growth potential creates game competitors and even more so if the competitors figure out that any competitive advantage that the incumbents possess is not sustainable. In Straumann's 2011 Annual Report it says:

*".....for example, the number of implant exhibitors at Europe's largest dental trade show, the IDS, rose from 240 in 2007 to almost 420 in 2011.....Many newcomers are not innovators and endeavour to compete on price. Few are able to offer the level of research, service and customer support that distinguishes Straumann worldwide."*

This represents quite extraordinary fragmentation in at least part of this market and I have not seen this in other segments of medical devices. Time will tell how successful new competitors will be, but at the very least we know that other companies are *trying* to muscle in on the implant business.

### (2) Are favourable characteristics an undoing?

Let's take a look at Straumann here. Even though Straumann has seen its cash profits collapse, it still earned an after tax cash return on tangible equity invested (ex. surplus cash)

of around 50% in 2012. These numbers are even more extraordinary because they are un-gearred as there is no debt. This is despite Straumann's industry-leading investments in marketing and research, which are expensed each year. Why so profitable? The profit margins are still high, 15% pre-tax cash margin in 2011. What's more, assets can be turned fairly rapidly. The inventory does not take particularly long to produce and sell and the mark-up is high. The plant and equipment is not especially complex or expensive either. Add all of this together and you can produce excellent returns on capital. Potential competitors can see that if they succeed their reward might be after tax returns on capital well in excess of their cost of capital and this spurs them on. Nobel's equivalent cash return on tangible equity was around 60% in 2012.

### (3) Economies of scale not obviously significant

Analysts and more casual business observers often appear to believe that size is usually an advantage. This is often true where economies of scale are relevant but size may in fact be a disadvantage where economies of scale are not material. Economies of scale are relevant when the required capital investment (sunk costs) or fixed operating costs are so significant as to bestow a material economic advantage on a larger company versus a smaller company (the larger company can spread these investments / costs over a larger customer base).

Here there are probably some economies of scale related to manufacturing, admin, marketing and research, but, in contrast to a company such as Intel, these are unlikely to be significant. Intel is an example of a company that seems to have benefited from enormous economies of scale that served as a competitive advantage. Intel spends billions of dollars on each facility and its production processes require extremely high and sustained volumes to keep unit costs down to its desired levels. Furthermore the cost of developing subsequent generations of microprocessors has historically been vast and fixed. This has meant that Intel's global scale has made it nearly impossible for traditional competitors to make inroads on its business historically. For the premium implant companies, manufacturing costs make up only around 30% of total costs, limiting the overall effect of any scale benefits. What's more, production activity can seemingly be fairly easily scaled up or down. We can tell this from observations of smaller industry operators. Unfortunately, Nobel and Straumann are the only listed full-service implant companies so comparison data is very difficult to come across. However anecdotes suggest that when Implant Direct (a small "value" implant company) was effectively acquired by Danaher in 2010, with annual sales of just \$60m (less than one tenth that of Straumann), the company has gross margins of 65% and EBIT margins of 25%. Osstem, the leading implant company in Korea, supposedly only began to focus on implants in the mid-late 1990s and by 2003, with only \$15m in sales it has a 62% Gross margin and a 10% EBIT margin. Manufacturing scale does not appear to be especially important in this business.

Straumann spends more than any other implant company on research and development. Yet it spent just \$44m in 2012 (6% of sales). This is not a fixed cost as it is spread over multiple projects across multiple regions. It is not clear how important research investment is, but even if it is important, small focused local players may be able to invest successfully in R&D with a much smaller budget.



Sales and distribution costs provide a barrier to entry in some businesses, but not necessarily here. Straumann spends more on sales and marketing than any other competitor but this is because it offers a high-touch service in around seventy countries worldwide. This spend is not necessarily scalable. If a competitor can successfully operate in a single market with a low-touch offering, then its marketing budget will be a small fraction of Straumann's. There are independent dental distribution companies in most major markets already that smaller implant companies can use without having to undertake major investments. The internet and improvements in software are enabling companies that can develop reputable products and an appeal with customers to reduce costs and sell overseas. This product is very light and high in value and so can be economically transported internationally. The ability to post instructional videos and receive orders online is making it easier for new and smaller competitors to do business.

#### (4) How sticky are customer preferences?

It seems reasonable to accept that practitioners have reasons to prefer to use established implant products. But it is not clear just how strong those preferences are. There are reasons to suspect that at least in some cases, they may not be as robust as Nobel and Straumann would like.

Implants are typically the subject of some regulatory approval process. This varies from country to country. In the US for example, these devices are "cleared" by the FDA through a fairly straightforward process called 510(k). This means that generally, applicants do not need to perform clinical trials to demonstrate clinical efficacy / safety. All that is usually required is to demonstrate equivalence with an existing predicate device (in other words if a new product is sufficiently similar to an existing product it can be "cleared" for sale). This is a small hurdle to jump for tacit regulatory backing. Rightly or wrongly, perhaps this gives more comfort to a dentist who is considering using a new implant system.

Dental implant technology is remarkably effective. Success rates are deemed to be well above 90%, higher than many other categories of medical technology. While of course there are many failures, anecdotes suggest most of these are the result of poor implant placement (dentist's fault) or patient after-care (patient's fault), rather than caused by the implant itself. There does not appear to be evidence to suggest that alternative implant systems are any less successful than the premium systems. Perhaps the confidence users have in the success rates of this category of product and the belief that newer systems are physically comparable to premium systems makes it easier to adopt alternative systems. One area where technology is further facilitating new competition is developments in surgical guide systems, which assist surgeons in physically placing implants in the right spot on the jaw. Some providers are updating their libraries to include some of the newer, low cost implant systems, making it easier for dentists to consider switching to alternative systems.

It seems to me that patent protection in this segment is generally weak. For example, we have seen Implant Direct effectively clone Nobel, Straumann and Zimmer products. Other manufacturers are making their systems compatible with premium implant systems meaning no need to change the restoration process or legacy toolkit. I believe that at least in some cases these factors make it easier for users to consider using newer implant

systems.

#### (5) Research and Innovation

There is certainly potential for well-funded premium companies to differentiate and there are opportunities to continue to improve the product offering. However existing technologies seem to work extremely well for most patients. It does not appear to me that there has been any step change in product performance in recent years. It is hard to judge from the outside, but rates of innovation seem to me to be slowing down. This probably makes it harder for the industry leaders to differentiate themselves.

It is certainly true that many of the new start-up companies seem to conduct no supporting clinical research, but this is clearly not the case with all. As mentioned above, the cost of running focused research programs is not necessarily prohibitive and many newer companies see that. The vast majority of clinical studies are company-funded so some users rightly view the results with some scepticism anyway.

#### (6) Customer Service and training

It is perhaps unsettling to think that a dental practitioner might rely on a sales rep to provide any kind of meaningful advice on clinical practice ('surely they don't have to ask a rep how to conduct a surgical procedure?'). In spite of what the premium companies may say, I am not sure how often this really happens but to the extent that it does occur, it is not likely to be a recurring requirement (you only need help to solve a problem once). The premium companies do arrange training sessions and education symposia, which I can believe some dentists value. However in the modern day with more and more attention being drawn to conflicts of interest, perhaps some practitioners will want to separate themselves from company sponsored training programs. Dentists do not need to depend on company-sponsored training programs anyway as there are independent training programs available.

Perhaps the premium companies deliver product more promptly and provide value add by including extra components for surgical procedures that can be returned if not required. But surely well managed inventory and FedEx can get around this?

#### (7) Cost

As mentioned previously, Straumann's estimate that the implant and accessories account for 15-20% of procedure cost. This is a reasonably low figure and implies that perhaps the saving might be too low to justify any effort or cost in choosing an alternative. I am not sure this is the right way to look at it. Implants are not consumer brands. Most patients probably don't know or care what brand of implant they get. Most probably trust the dentist to ensure that the product quality is high. This means that many dentists can try to maintain procedure cost but pocket the savings on the implant by using a cheaper system (assuming quality etc. deemed adequate). The price differentials between premium and alternative products are sometimes vast. The cost of Implant Direct's version of a leading Straumann implant, including accessories, is \$200 versus Straumann's all-in list price of



\$600. As compared with Implant Direct, some other systems are more expensive, others cheaper. Even if a high volume user can save just \$100 per implant, this equates to \$40,000 additional profit for the dentist if he buys 400 implants per year. A saving of \$200 implies a profit boost of \$80,000 per annum. Even for a practitioner earning \$500,000 a year, this amount is not to be sneezed at.

Doesn't the system-specific toolkit provide a cost to switching? Maybe, but these toolkits retail for \$1,000-\$2,000. A high-volume user can justify this investment with savings in the first few weeks of using a high quality, cheaper, alternative system. Also I am pretty sure a willing supplier will subsidise the kit to win the implant business.

#### (8) Is product complexity a competitive advantage?

Straumann and Nobel regularly face questions about the challenges posed by "lower cost" competitors. They recognise their presence and seem to acknowledge a place for at least some of these competitors. However each believes they are sufficiently differentiated by virtue of supportive clinical research, superior service and more sophisticated products. This last point is interesting. Some patients are harder to treat for one reason or another and may require a more specific product than most alternative providers may be able to provide. On a recent conference call, Nobel Biocare claimed that it saw part of its competitive advantage as residing in its wide range of highly engineered components that enable it to treat patients that lower-cost companies cannot. This is interesting. However I believe that single tooth replacements account for over half of the market so these complex cases seem to be in the minority. I am a little worried that as alternative producers gain recognition, firepower and confidence from success in simpler product categories, they will move up the value chain – this is what happens in other industries. Also it is hard to understand how, in the face of such an apparent hindrance, Alphabio Tec (the lower-cost implant company acquired by Nobel Biocare a few years ago) was able to gain a 60% market share in its home market, Israel.

#### (9) Why pricing trends may be misleading

Comments from the premium companies in recent years indicate that premium pricing trends have remained largely unchanged through the recession. Does that mean that new competition is having little or no impact? Not necessarily. Competition can erode profitability in different ways. In some businesses, in spite of price stability, increased competition reduces sales volumes for incumbents and this can significantly raise unit costs through lower rates of absorption. In other businesses, perhaps the case here, client servicing costs rise as the leaders attempt to differentiate themselves from the pack; basically the cost of doing business rises and returns decline. This may explain some or much of the margin pressure being experienced by Straumann and Nobel in recent years. Both have recently announced cost-saving initiatives. Only time will tell what the effects of such initiatives will be.

#### (10) Evidence that at least some competitors appear to be succeeding

If is quite shocking to hear that there are over 400 companies trying to muscle in on the

profitable implant business. If incumbents prove to have some sustainable competitive advantage, one would imagine that many of this 400+ group will leave with tails between legs at some point. Straumann and Nobel speak of anecdotes that many smaller companies are struggling and are attempting to sell-up. It is hard to know how accurate or meaningful such anecdotes are (there will always be at least some failures). It is also very difficult to find objective evidence of the successes or otherwise of relatively new entrants because so few implant companies are quoted. However alongside the aforementioned anecdotes of failures, there is evidence of success stories too. Implant Direct is expanding aggressively and I previously addressed how profitable that company supposedly is. Neodent, the market leader in Brazil, has 40% EBITDA margins according to Straumann, and is now expanding across South America and into the US and Europe. AlphaBio Tec, came to dominate the market in Israel and was subsequently acquired by Nobel Biocare. I have seen numbers that suggest that some other companies are barely profitable or loss making (such as Neoss and Biohorizons) but this could be because of investment spending. I have already referred to Osstem, the market leader in Korea. In spite of heavy investments in overseas markets, it still achieved a 60% gross margin, a 10% EBIT margin and 8% ROE in 2011. Osstem is investing aggressively overseas, sells in fifty countries and is now the market leader in China as well as its home market.

What is particularly interesting about Korea is that it has become one of the most developed implant markets in the world and at the same time seems to have transitioned towards lower cost implants and away from the imported products provided sold by premium western companies. Competition has intensified significantly as a result. Israel, another of the most developed markets is also dominated by lower cost implants. Are these market aberrations or are they informing us about changes that may occur in the much larger European and US markets?

## **Conclusion**

I am particularly interested in studying companies that have sustainable competitive advantages. However, just as interesting are the "roman candles". We can learn so much by studying them. I don't know if the premium dental implant companies belong in one group or the other. I intend to continue to observe the progress of these companies in the hope of finding out the answer and learning from their experiences. Please respond with your feedback, whether you agree or disagree with my observations.

***The Value Investment Institute, June 2013***